ABSTRACTS

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Contents

ORAL PRESENTATIONS

Category: Adult Clinical

O.001

The concordance between component tests and clinical history in British adults with suspected pollen-food syndrome (PFS) to peanut and hazelnut

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Objectives

Background: Mild allergic reactions to peanut/hazelnut occur in ~30% of patients with pollen-food syndrome (PFS). Component tests are considered a useful adjunct to diagnosis.

Aims: To assess concordance between component tests and clinical history in suspected PFS to peanut/hazelnut in a 'real world' clinical setting.

Method

Patients were classified into PFS (Group-1; n=86; 29 M; mean age ± SD- 34.5 yrs±12.8), PFS with mild systemic symptoms (Group-2a; n=58; 22 M; mean age ± SD - 22.5 ± 12.9 yrs.) and anaphylaxis (Group-2b; n=17; 7M; mean age ± SD - 28.9±10 yrs.). To avoid bias, Group 2b were excluded from analysis since component tests are not routinely requested. SIgE of ≥0.35 kUA/L was considered positive.

Results

Group-1 Hazelnut: 85% were monosensitised to Cor a1 and 12% to storage protein/s and Cor a8. Group-1 Peanut: 41% monosensitised to Arah 8, 44% to storage protein/s or Arah 9 and 15% negative to all components. Group-2a Hazelnut: 67% monosensitised to Cor a1, 16% sensitized to storage protein/s and 17% negative to all components. Group-2a Peanut: 19% monosensitised to Arah 8, 62% sensitised to storage protein/s and/or Arah 9, 19% negative to all components.

SIgE to Arah 8 and Cor a1 were greater in Group 1 vs Group 2a - [median (IQR); hazelnut: 12.1 (7.8-25.2) vs 2.4 (0.36-6.3); $p<0.001$; peanut: 2.4 (0.10-21.1) vs 0.3 (0-3); $p<0.01$)].

Conclusions

Concordance between component tests and clinical history for adults with PFS was good for hazelnut ($\kappa=0.628$) but poor for peanut ($\kappa=-0.118$). A food challenge is gold standard for discordant cases.

O.002

Chlorhexidine allergy diagnosis in the UK: clinical features and investigational pathways

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Objectives

To describe the clinical and laboratory features of chlorhexidine allergy in 4 major UK Specialist centres.

Method

We recruited patients with a diagnosis of chlorhexidine allergy from four specialist allergy clinics in the UK, and found 104 with perioperative hypersensitivity reactions to chlorhexidine reactions.

Results

The majority were life threatening. Men undergoing urological or cardiothoracic surgery predominated. Skin prick testing and sIgE testing were most commonly used for diagnosis. 53% of diagnoses were made on the basis of a single positive test.

Where multiple tests were performed the sensitivity of intradermal, basophil activation and skin prick testing was 68% (50-86%), 50% (10-90%) and 35% (17-55%) respectively.

Seven percent were negative on screening tests initially, and 12 cases were only positive for a single test despite multiple testing. Intradermal tests appeared most sensitive in this context.

Additional sensitisation to other substances used perioperatively, particularly neuromuscular blocking agents (NMBA), was found in 28 patients, emphasising the need to test for possible allergy to all drugs to which the patient was exposed even where chlorhexidine is positive.

Conclusions

UK centres should use an agreed harmonised diagnostic test algorithm in all patients.

Blood and skin prick tests are of similar utility but can miss sensitisation, and IDT appears necessary in negative cases with clinical suspicion of chlorhexidine allergy.

All patients should have IDT and SPT/sIgE to enable proper evaluation of relative predictive values in large cohorts.

Multiple sensitisation is sufficiently common to require testing of all potential culprits to ensure accurate attribution of causation. Do not stop testing at the first plausible positive.

O.003

Skin prick testing and specific IgE are not predictive of sesame allergy in adults

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Objectives

To evaluate the usefulness of skin prick testing (SPT), specific IgE (sIgE) and various clinical parameters in diagnosing sesame allergy as determined by oral food challenges (OFC) in adults.

Method

We reviewed the clinical data of all patients who had undergone sesame OFC at Guy's & St. Thomas' and Royal Brompton & Harefield NHS Foundation Trusts, (London, United Kingdom) between 2010 and 2016. Results of SPT (to various sesame-containing foods), sesame-specific IgE and various clinical parameters (age, gender, history of atopy, other food allergies and clear history of reaction to sesame) were analysed to evaluate their usefulness in predicting positive OFC.

Results

Thirty-three patients underwent supervised sesame OFC, with 10 (30%) positive challenges.

There were no significant differences in age (p=0.41); gender (p=0.24); history of atopy (allergic rhinitis, p=0.06; asthma, p=0.06; atopic dermatitis, p=0.12), other food allergies (p=0.06), presence of clear history of reaction to sesame (p=0.26); mean SPT diameters (p=0.06) and sIgE values (p=0.25) between patients with positive and negative OFC. The absolute mean SPT wheal diameters and sIgE results were actually smaller in the positive (0.3 ± 1.0mm, 0.16 ± 0.29kUA/l) than negative OFC group (1.4 ± 1.6mm, 2.00 ± 4.85kUA/l).

In this selected cohort, SPT had a sensitivity of 10.0% and specificity of 56.5%; and sIgE had a sensitivity of 10.0% and specificity of 42.9%.

Half of patients (5/10) with positive OFC had reactions of grade ≥3 in severity either during their index reaction or OFC. There were 2 serious reactions during OFC, each requiring 2 doses of intramuscular adrenaline for refractory hypotension.

Conclusions

We present the largest published cohort of sesame challenges performed in adults. Our study confirms that SPT and sIgE results are not predictive of sesame allergy in adults. There were no significant differences in SPT wheal diameters, sIgE results or studied clinical parameters between allergic and non-allergic patients. OFC remains essential for diagnosis, but should be conducted cautiously under experienced supervision due to the inherent severity and unpredictability of sesame reactions.

O.004

Adverse drug reactions reporting in the UK: 50 years of experience

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Objectives

In England, drug allergies and adverse drug reactions lead to 62.000 admissions/year. There has been a recent increase in these reactions (including serious adverse events) with associated morbidity, mortality and prolonged inpatient stay. Although in the UK the Yellow Card Scheme (adverse drug reactions reporting) has been in operation in the UK since 1964, good epidemiological data is missing.

Method

UK Medicines and Healthcare Product Regulatory Agency (MHRA) received 7758 spontaneous suspected adverse drug reaction (ADR) reports between 1965 and 2015 directly from healthcare professionals and members of the public. The reports were associated with anaphylactic responses (anaphylactic reaction, anaphylactic shock, anaphylactic transfusion reaction, anaphylactoid reaction, anaphylactoid shock and anaphylactoid syndrome of pregnancy).

Results

Over last 50 years the top 20 reported drugs included (from least to most common): antiemetics, dyes, local anaesthetics, hormones, vitamins, steroids, iron, monoclonal antibodies, quinolones, immunosuppressants, other antibiotics, cephalosporins, intravenous fluids, opioids, radiocontrast media, neuromuscular blocking agents, general anaesthetics, non-steroidal anti-inflammatory drugs, beta-lactams (mainly penicillins) and vaccines. Most reactions were classified as ‘recovered/resolved’ with much fewer labelled as ‘unknown’, ‘not recovered/resolved with sequelae’ or ‘fatal’. The level of ADR reporting fluctuated between given years due to a variety of reasons such as a medicine/vaccine being new (reporting rates are generally higher when a product is first introduced), stimulated interest/publicity and variations in exposure to the medicine/vaccine.

Conclusions

This data contributes to our understanding of the epidemiology of drug allergy in the UK. However further studies will be required to confirm whether future spontaneous reports truly represent drug allergy defined as an adverse drug reaction with an established immunological mechanism.

O.005

Basophil histamine release assay predicts response and time of response to omalizumab in severe chronic spontaneous urticaria

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Objectives

Omalizumab (anti-IgE) is a licensed add-on therapy for chronic spontaneous urticaria (CSU) non-responsive to H_1-antihistamines. There are no validated biomarkers to predict response and time of response to omalizumab. Basophil histamine release assay (BHRA) detects serum histamine-releasing IgG autoantibodies to high affinity receptor for IgE (FcεRI) or cell-bound IgE.

Method

In our centre BHRA is routinely performed in all severe CSU patients before starting omalizumab or immunosuppressants. A retrospective case review of patients treated with 300mg omalizumab every 4 weeks was undertaken to assess if BHRA result predicted the likelihood of response and time of response to omalizumab. Urticaria activity score 7 (UAS7) was used to monitor response, which was defined as reduction (UAS7<16) or complete resolution of symptoms (UAS7=0). Fast response occurred within the first week of treatment.

Results

113 patients (75 female; mean age 44) were treated with omalizumab from November 2015 to March 2017. 104(92.0%) patients responded: 97(93.3%) were BHRA-negative and 7(6.7%) were BHRA-positive. Average pre-treatment UAS7 was 37 in the BHRA-negative group and 38 in BHRA-positive group. In the BHRA-negative group, 52(53.6%) patients responded within a week, 17 between 1-4weeks, 11 between 5-8weeks, 13 between 9-12weeks and 4 between 13-16weeks. In the BHRA-positive group, 2 patients responded within a week, 2 between 5-8weeks, 2 between 9-12weeks and 1 between 13-16weeks. Median time to response in BHRA-negative patients was within 1 week whereas in BHRA-positive patients it was 6.5 weeks. The response rate in BHRA-negative was 96.0% (97/101) and in BHRA-positive was 58.3% (7/12). The response rate ratio was 1.646 (95% CI: 1.02-2.66; p=0.0417). Of 9 omalizumab non-responders, 4 (44.4%) were BHRA-negative and 5(55.6%) were BHRA-positive.

Conclusions

BHRA-negative patients appear to be more likely to respond and be fast responders to omalizumab than BHRA-positive patients. These findings suggest that BHRA could be a useful marker to gauge response to omalizumab.

Category: Paediatric Clinical

O.007

One nut allergy does not rule all nuts out: results from the Pronuts study

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Objectives

Previous nut allergic individuals were advised to avoid all nuts. With the advent of studies promoting oral tolerance induction, the introduction of 'safe' selective nuts and seeds in children already allergic to one nut is gaining momentum. The Pronuts study seeks to determine whether this approach is feasible and safe.

Method

The Pronuts study recruited children up to 16 years of age with at least one confirmed nut or seed allergy in London, Geneva and Valencia. Based on sequential challenge to 11 nut/seeds, we determined the true rate of co-existent peanut, tree-nut and sesame seed allergy. Patients were then asked to introduce all 'safe' nuts/seeds regularly into the diet to determine the feasibility and safety of this approach.

Results

A total of 133 children were recruited between the three study centres and underwent over 1000 challenges to all nuts and seeds as per the study protocol. In Valencia due to the severity of walnut allergic reactions, pecan nut was not challenged in 17 participants. Median age was 4 years in London, 5.5 years in Geneva and 7 years in Valencia. In London around half of children were allergic to only one nut whereas in Geneva and Valencia this reduced to a third. The most common nut allergy was peanut in London, cashew in Geneva and walnut in Valencia. The strongest nut allergy clusters were between cashew-pistachio and walnut-pecan-hazelnut-macadamia.

Conclusions

This is the first prospective study to establish the rate of challenge proven co-existent peanut, tree-nuts and sesame seed allergy. The majority of participants were able to introduce up to 9 additional nuts and/or sesame seed into their diets. The differences between London, Geneva and Valencia in the prevalence of monoallergy, specific nut allergies and clusters may be due to difference in age and/or dietary/environmental exposures to nuts.

O.008

Immunotherapy for childhood allergies in England - does postcode lottery apply?

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Objectives

To compare the proportion of children being offered allergen specific immunotherapy in NHS trusts within a) London and b) West Midlands (WM) regions.

Method

Using the relevant ICD-10 codes for allergen immunotherapy, we interrogated the Hospital Episodes Statistics (HES) dataset for the years 2008-2014 to estimate the trends in the proportion of children under the age of 17 years receiving a) allergen immunotherapy b) Subcutaneous Immunotherapy [SCIT] only c) Sublingual Immunotherapy [SLIT] only and d) those starting immunotherapy within the London and WM regions.

The mid-year age specific population statistics published by the Office of National Statistics were used to estimate the rates per 100,000 children.

Analyses were performed using Stata13 and Excel 2010.

Results

The proportion of children who received allergen immunotherapy in 2014 was over 5 times higher in London compared with that of the WM (34.2 vs. 6.7 per 100,000). The overall proportion of children who received SCIT and SLIT in 2014 were also substantially lower in the WM (6 vs 25 per 100,000 for SCIT and 0.6 vs. 9.2 per 100,000 for SLIT) compared with London.

Only 1.8 children per 100,000 started allergen immunotherapy in 2014 in the WM compared with 8.7 in London. Although overall rates for immunotherapy between 2008-2014 have improved by 184% in the West Midlands, the absolute values remain very low. Immunotherapy rates in London have increased by 250% during this period.

Conclusions

There is strong suggestion of post code lottery in the management of children with allergies in England. Children living in the West Midlands region appear less likely to be offered allergen specific immunotherapy treatment compared with those residing in London. These data highlight the discrepancies in the availability of specialist services for paediatric allergy across the country.

O.009

Gene-environment interaction between filaggrin and hard water associated with increased risk of atopic eczema

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Objectives

We performed a longitudinal analysis in the Enquiring About Tolerance (EAT) cohort to examine whether domestic water hardness was associated with an increased atopic eczema risk after 3 months of age and to assess the role of common filaggrin (FLG) loss-of-function mutations.

Method

All EAT study children aged 3 to 36 months without atopic eczema by 3 months were selected from a cohort of 1,303 children participating in the EAT study. Water hardness exposure was defined as the domestic water calcium carbonate concentration supplied to the child's main residence. The primary outcome was the development of 'any eczema', a composite of visible eczema or parent-reported eczema, between 3-36 months of age.

Results

A Cox proportional hazards model was fitted with adjustment for key confounders, including ethnicity, home location (urban versus rural) and the presence of a domestic water softener. 958/1,303 (74%) infants were included in the analysis. Of these, 351 (37%) developed eczema by 36 months of age. There was no overall statistically significant association between exposure to harder (>255 mg/L $CaCO_3$) versus softer (≤255 mg/L $CaCO_3$) water: crude HR 0.98 (95% CI 0.80, 1.21). However, stratification by FLG mutation status showed a significant interaction with water hardness: HR 2.94 (1.90, 4.53) compared to the reference group with wild-type FLG living in softer water areas. The relationship remained significant [HR 2.75 (95% CI 1.76, 4.28)] following adjustment for confounders.

Conclusions

These data provide evidence of a gene-environment interaction between water hardness and common loss-of-function mutations in the FLG gene. We are planning an intervention study with a water softening device installed around the time of birth to further test the effect of water hardness on skin barrier function and atopic eczema risk in early life.

O.010

Homozygous status for the Arg16 variant is associated with increased prescribing of controller asthma medication and increased asthma-related prescribing cost

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Objectives

Asthma is a chronic respiratory disease, characterised by relapse and remission of symptoms. The Arg16 variant of the ADRB2 gene has been associated with diminished clinical responsiveness to β2-agonists, and increased risk of asthma exacerbations. The association between this variant and asthma-related prescribing is unclear. Our hypothesis is that the Arg16 allele is associated with long-term increased use of prescribed asthma medication.

Method

A secondary analysis of BREATHE, a study of gene-environment associations with asthma severity, was undertaken. BREATHE data were collected on participants with asthma, aged 3-22 years, between 2003 and 2005, in Tayside and Fife, Scotland. Through collaboration with the Health Informatics Centre in Dundee, BREATHE was linked to several databases: Accident & Emergency, community prescribing and Scottish Morbidity Records (hospital admissions). This linkage allows exploration of associations between genetic variation and prescribing. Data between 2005 and 2013 were analysed using random effects generalised linear models.

Results

The analysis was performed on 1009 individuals. Over the 9-year period, a significant association was found between individuals homozygous for the Arg16 variant and the prescribing of prednisolone (Gly/Arg vs. Arg/Arg - Incidence Rate Ratio (IRR): 1.54, 95% CI: 1.06-2.25; Gly/Gly vs. Arg/Arg - IRR: 1.64, 95% CI: 1.12-2.42). A significant association was also found between the Arg16 variant and prescribing of anti-leukotriene antagonists (Gly/Gly vs. Arg/Arg - IRR: 2.33, 95% CI: 1.06-5.13) and a combination of long-acting β2-agonist and corticosteroids (Gly/Arg vs. Arg/Arg - IRR: 2.80, 95% CI: 1.35-5.81; Gly/Gly vs. Arg/Arg - IRR: 3.15, 95% CI: 1.50-6.63). Over the 9-year period, children and adults with the Arg/Arg genotype cost more £250 to the NHS than children and adults with the Gly/Gly or Gly/Arg genotype.

Conclusions

Homozygous individuals with the Arg/Arg variant are associated with long-term increased prescribing of asthma medication. Defining subgroups of individuals requiring more medication could help develop targeted management strategies.

Category: Basic Science

O.011

An efficient approach for recombinant expression and purification of Rhinovirus 16 (HRV-16) capsid proteins in Escherichia coli

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Objectives

Objective: There is strong evidence that human rhinovirus (HRV) infections and respiratory allergies are the two most significant risk factors for asthma exacerbations leading to acute care visits or hospitalization. Surface-exposed capsid proteins (VP1, VP2, and VP3) are important for binding of HRV to corresponding receptors on human epithelial cells. To facilitate research, vaccine development and diagnosis, we developed an efficient method for homogenous production of HRV capsid proteins in E. coli.

Method

Methods: HRV-16 capsid proteins were expressed in E. coli Rosetta 2 cells under IPTG induction. Proteins were re-folded and purified from the insoluble fraction by stepwise dialysis followed by Immobilized Metal Affinity- and gel-filtration chromatography steps.

Results

Results: HRV-16 capsid proteins VP1, VP2, and VP3 expressed mainly as insoluble proteins in inclusion bodies, while only small amounts expressed in the soluble fraction. Protein solubility was highly dependent on the presence of 0.5M L-Arginine in most of the purification and storage buffers. The protein preparations were > 90% pure as assessed by silver-stained SDS-PAGE and western blot analysis using HIS-tag and HRV-16 VP2-specific antibodies.

Conclusions

Conclusions: Expression of individual HRV capsid proteins is feasible in E.coli and the purified proteins will provide useful tools to study the immune mechanisms involved in rhinovirus-induced asthma exacerbations, epitope mapping, and for diagnostic purposes.

O.012

Identification of allergens present in mouse urine and epithelium extracts using a serum immunoblotting method

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Objectives

To identify potential allergens in mouse urine and epithelium.

Method

Mouse urine was collected from adult mice, extracted by dialysis and lyophilized. Mouse epithelium was removed from adult mice after necropsy and extracted in 0.05% Tween 20/phosphate-buffered saline. The protein in these samples was separated in SDS-PAGE and blotted to a nitrocellulose membrane. The proteins were then incubated with pooled serum from patients with high specific IgE to mouse urine (ImmunoCap Score >18kU/L), anti-human IgE and a peroxidase substrate, to visualize allergens in a chemiluminescence western blot.

Results

From the mouse urine extract, three distinctive proteins binding to patient IgE were observed. Known allergens mus m 1 (Allergome, 478) at 19kDa and mus m 4 (Allergome, 755) at 65kDa were detected. In addition there was a band at ~35kDa which is not identified within allergen databases. In the epithelium extract, mus m 4 was seen alongside at least 5 other IgE binding proteins between 24-150kDa. None of these 5 proteins were identified within allergen databases.

Conclusions

There are proteins within mouse urine and epithelium which are able to bind IgE from patients with mouse urine allergy but are not characterized as allergens in current databases. The contribution of these proteins in the onset of allergic asthma for people working with laboratory animals is unknown. Proteomic testing would provide the necessary characterization of these unknown potential allergens.

O.013

Characterisation of milk-specific t-cell responses in atopic dermatitis

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Objectives

Our study aimed to use established methods to enumerate milk-specific T-cell (Tc) responses in Atopic Dermatitis (AD) by answering:
i) Can milk-specific T-cell responses be detected in AD?
ii) Is the frequency of milk-specific Tc different between AD and controls?

Method

Peripheral blood mononuclear cells from adult, milk-tolerant non-atopic controls (n= 15) and AD (n= 22) were stimulated with milk proteins (Beta-lactoglobulin (BLG), Casein (CAS), and formula milk) and subsequently assayed for Interferon (IFN)γ, Interleukin (IL) 4, and IL10 responses with Enzyme-Linked ImmunoSpot (ELISpot). BLG and CAS short-term T-cell lines (TCLs) were tested for expansion of antigen-specific cells.

Results

There were no differences in the proportions of circulating Th1 and Th2 responses between AD and controls. Both groups demonstrated IFN-γ responses to BLG and CAS but responses were significantly lower in AD ($p<0.05$). Milk-specific IL4 responses detected in AD were greater than in controls, but were overall low level. Significantly ($p<0.05$) greater milk-specific Th2 responses were seen to CAS at the highest concentration tested. There was no difference in IL10 responses across both milk proteins. Only AD TCLs demonstrated expansion of antigen-specific Tc.

Conclusions

The clinical picture of low frequency of milk-specific Th2 cells in AD was consistent with the cohort of patients tested who had no clinical allergy to milk. Circulating milk-specific Th1 cells were detectable in both groups, but circulating Th1 cytokine responses to milk proteins were significantly greater in controls as opposed to AD. However, on culture with milk proteins, only AD patients showed antigen-specific Th1 proliferation. Taken together, this may suggest a possible skew towards food-specific central memory Th1 in AD versus effector memory Th1 in controls. Additionally, the impaired induction of milk-specific Th1 responses in AD may reflect a mechanism for Th2 skewing with increased subsequent risk of milk-specific IgE formation.

O.014

Gene expression profiles reveal innate and adaptive immune responses in DRESS hypersensitivity to antibiotics

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Objectives

T-cell mediated drug hypersensitivity reaction (DHR) can manifest in heterogeneous clinical presentations and associated with significant morbidity and mortality. Our study sought to apply high-throughput whole transcriptome bioinformatics analysis to elucidate underlying biological mechanisms involved in the initiation of DHR by antibiotics.

Method

In 5 clinically diagnosed DRESS cases, drug-specific responses were confirmed in vitro with measurement of drug induced proliferation and IFN-γ ELISpot assay. Whole transcriptome gene expression of peripheral blood mononuclear cells (PBMCs) challenged with culprit drugs or control was undertaken over a time course (0, 2, 6, and 24 hours) with Illumina mRNA-sequencing.

Results

Temporal regulation of molecular networks analysis identified 1718 differentially expressed genes (DEGs): 1249 upregulated, 469 downregulated. The largest cluster included genes involved in cell proliferation, phosphorylation and protein metabolism ($p<0.001$), correlating with the strong proliferative responses observed. DEGs revealed distinct innate immunity activation, including toll-like receptor ($p<0.00001$) and cytokine-mediated (IL-12, IL-23, IL-1) ($p<0.0001$) signalling events as early as 2 hours post stimulation. These events were followed by myeloid cell activation and migration, chemokine signalling and adaptive immune responses ($p<0.0001$). Analysis also revealed significantly enriched anti-viral response pathways, herpes viruses ($p<0.001$).

Conclusions

Gene expression profiling demonstrated activation of adaptive immunity pathways, but the early induction of innate immune signalling may suggest that direct interaction between innate immunity and drug is central to DRESS pathogenesis. Anti-herpes responses were identified in vitro in PBMCs transcriptomes, in line with previous work implicating herpes viruses in DRESS pathogenesis. These findings suggest that our system could serve as promising model for studying the complex transcriptional responses and immune mechanisms underlying drug hypersensitivity reactions.

O.015

Development and validation of the candidate European Pharmacopoeia (Ph. Eur.) standard method for quantification of the major birch pollen allergen, Bet v 1

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Objectives

There is currently no standardised method for the direct comparison of allergen extracts across different manufacturers. The European Directorate for the Quality of Medicines (EDQM) recently led a joint programme (BSP090) to establish references to allow for the standardisation of allergen extracts. This programme identified a pair of monoclonal antibodies targeting the major birch pollen allergen Bet v 1 as suitable for submission to the European Pharmacopoeia. Our aim was to utilise these antibodies to develop an ELISA kit which could be used as the standard method for quantification of Bet v 1.

Method

Cell lines producing the monoclonal antibody pair which had been validated in the BSP090 multi-centre ring trial were acquired. Antibodies were purified and developed into a two-site ELISA using a recombinant Bet v 1 calibrant which was sub-standardised to the EDQM reference preparation for Bet v 1 (rBet v 1 CRS Y0001565). The assay was validated under the auspices of the Paul-Ehrlich Institute and the EDQM.

Results

The complete kit format (containing pre-coated plates, as well as all buffers and reagents) allowed for the consistent measurement of Bet v 1 in birch pollen extracts within the same lab (IntraLab CV=5.5%) and across different labs (InterLab CV=13.5%). The average recovery from matrix spiked samples (CRS in birch pollen extracts) ranged from 75-112% with an average recovery of 91% (n=10).

Conclusions

The Bet v 1 ELISA 2.0-EP kit will enable allergen manufacturers and regulatory authorities to adopt a standard method for Bet v 1 determination. The development of a standard method that will ultimately be included in the European Pharmacopoeia represents a major step forward in the standardization and quality control of allergenic products. This will provide consistent dosing which will improve the efficacy of allergenic products and improve the quality of life for patients who are allergic to birch pollen.

Category: Allied Health & Primary Care

O.016

Are GPs managing patients with cow's milk protein allergy according to the Milk Allergy in Primary Care guidelines?

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Objectives

The Milk Allergy in Primary Care (MAP) guideline was developed to aid GPs in the diagnosis and initial management of cow's milk protein allergy (CMA), with a focus on distinction between IgE and non-IgE mediated CMA, appropriate formula choice and the management of non-severe non-IgE mediated CMA in primary care.
This audit looks at whether local GPs are managing patients with CMA according to the MAP guidelines as well as subsequent management of referrals in the allergy department.

Method

Patients seen in the allergy department with CMA were identified by retrospectively searching clinic letters at the Royal Surrey County Hospital over a one year period. Their management was analysed by looking at the GP referral letters and clinic letters.

Results

Of the 24 patients referred directly from their GP, none of the referrals made any distinction between IgE/non-IgE mediated allergies. 83% of patients had been placed on an elimination diet in primary care, and for 85% the alternative diet was nutritionally complete. A home challenge was performed in 1 out of 5 patients with non-severe non-IgE CMA to confirm diagnosis. Of those children placed on a hypoallergenic formula, 9 were placed on an amino acid formula and 8 on an extensively hydrolysed formula, with Neocate being the most popular but also the most expensive. Only 7 out of 24 patients were referred to the dietician from the GP, but 20 of the remaining 21 patients were referred by the allergy centre.

Conclusions

The adherence to parts of the MAP guidelines was low and more GP education regarding the guidelines is required. There is a need to use an extensively hydrolysed formula when appropriate, rather than inappropriate use of the more expensive amino acid formulae.

O.017

Rhinolight® endonasal phototherapy in primary care: first impressions

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Objectives

Rhinolight® is a novel endonasal phototherapy treatment for allergic rhinitis utilising the immunosuppressive effects of ultraviolet radiation. It is in widespread use in many European countries and also in Japan and Australia. This study aims to evaluate its efficacy in the Irish population using the first Rhinolight® treatment offered in the British Isles.

Method

Patients with proven (skin prick testing positive and nasal endoscopy) intractable allergic rhinitis were invited to undergo endonasal phototherapy using Rhinolight® at our Dublin clinic. Participants underwent between six to ten sessions (most had eight) of phototherapy and subsequently stopped or significantly reduced their pharmacological treatment. Symptom scores were recorded before and after the course of treatment. Eight symptoms were each scored on a scale of 0-5 giving a total possible score of 40. Symptom scores were evaluated using simple statistical comparison of differences between before and after scores.

Results

Fifty-seven patients were recruited and consented for inclusion in the study comprising 25 females and 32 males. Ages ranged from 7-73 with a mean and median of 34. Most participants experienced a reduction of symptoms with mean and median symptom reduction of 9 points and a maximum of 34 for one female participant. Seven participants experienced no reduction or an increase in symptoms. There were no obvious similarities between these participants (3 males, 4 females, age 7-54). Overall, similar average reduction in symptoms was observed between males and females and across all ages.

Individual nose related symptoms were most reduced (blocked, runny and itchy) with mean reductions of one or two, while systemic symptoms were less likely to be improved (cough/wheeze, headaches) with mean reductions of one or less.

Conclusions

This first evaluation Rhinolight® in the British Isles shows it to be a successful treatment for intractable allergic rhinitis rhinitis, especially for nasal symptoms. Most patients achieve relief of symptoms without continuing pharmacological therapy.

O.018

Meeting calcium requirements in cow's milk protein allergy - the role of the dietitian as educator

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Objectives

Nutritional adequacy is essential in management of children with food allergies. Milk allergy is one of the most common allergies and impacts calcium sufficiency in the diet without specialist dietetic input. Current calcium education was audited at The Royal London Hospital.

Method

Designed questionnaire to capture feedback/opinions on calcium education during out-patient dietetic consultation. 31 cow's milk protein allergy (CMPA) patients between September 2016 and April 2017 questioned. Participants 6 months to 10 years, mean age 2.27 years. 9/31 (29%) had non-IgE CMPA and 50% > 4 allergies. Calcium intake was assessed by 24-hour recall, at initial consultation and after 6-weeks.

Results

20/31 (65%) met calcium requirements at baseline and 90% at follow-up. 9/11 participants with insufficient calcium intake at baseline met their requirements by follow-up. Dietary calcium education was given for: 1) transition from breast milk/ hypoallergenic formula to non-prescribable dairy alternative, 2) dietary variety and 3) parental concern. 74% participants rated their understanding of the advice given by dietitian as' very good' but only 39% rated their confidence levels for implementing dietary changes as ‘very confident ‘ . All participants found written information useful and easy to understand.

To test knowledge of foods rich in calcium and free from allergens, parents were presented with 9 food options. 87% correctly chose soya yoghurt, 84% coconut yoghurt, 52% fortified bread, 50% oat milk and 48% sardines. 5 parents (16%) chose goat's milk which is unsuitable for CMPA. 9 (29%) incorrectly chose low calcium foods.

Conclusions

Calcium education led to 25% increase in participants meeting their calcium requirements, highlighting the importance of dietary education. The audit identified disparity between reported understanding and confidence to implement dietary changes, as reflected in test portion of questionnaire. Testing understanding/retention of suitable calcium sources should be incorporated in future practice and emphasise unsuitability of goat's milk in CMPA.

O.019

An audit of the prescription and use of adrenaline auto injector devices in adults and children

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Objectives

There is discrepant national advice on how many Adrenaline auto injector devices (AAIs) should be prescribed. There has been no large audit to date which has looked at whether patients comply with recommended guidelines. This audit sought to clarify both prescribing and patient behaviours for the use of AAIs.
Are AAIs prescribed appropriately?
Is the number of AAIs being carried in line with national recommendations and are patients and parents taking full responsibility for their devices?
Is AAI training being provided when a device is prescribed?
Are Personal Allergy Action plans being issued?

Method

The BSACI nurses' committee developed an audit proposal, circulated to all BSACI nurse members. Data collection in each centre took place over a four month period including all patients or parents of children attending an Allergy Clinic prescribed an AAI either previously or during their appointment. A standard questionnaire developed by the Nurses' Committee was used for data collection.

Results

7 allergy centres participated. (Data collection is ongoing). Preliminary results at Bristol Children's Hospital identified 29 children prescribed an AAI. 3 patients had used their device; 1 was administered unnecessarily by nursery staff. No patient received a second dose. Patients carried between 2 and 9 devices but only 8(47%) had their device with them. 7 devices were out of date or the incorrect dose. 1 patient was carrying a new, unfamiliar AAI. No patient prescribed an AAI in primary care had an Action Plan or had received any training.

Conclusions

Preliminary data suggests that many patients possess an excessive number of AAIs but frequently do not carry their device. Possession of expired devices was common. Prescriptions from primary care were often not supported by training or an Action Plan. No patient using their AAI required a second dose of adrenaline.

O.020

Attitudes of adolescents with food allergies: a systematic review

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Objectives

To conduct a systematic literature review to explore attitudes towards food allergies in adolescents aged 11 to 18 years.

Method

A systematic search of 8 electronic databases; Scopus, Wiley, Web of Science, PubMed, PsycArticles, ProQuest, Cochrane Library and Science Direct was conducted. Papers that included data from participants aged 11-18 years old with a food allergy, that referred to their attitudes towards food allergy were retrieved and analysed. Thematic analysis was used to synthesise the findings.

Results

The search identified 12 relevant papers, which revealed two overarching themes or risk and allergic identity with six sub-themes related to attitudes; labelling, place, adrenaline auto-injectors (AAIs), risk of anaphylaxis, peers and education, and allergy management. Adolescents were sceptical about food labelling and 'may contain' labels were considered in relation to where the food was being bought from, for example a well-known brand was more likely to be trusted. In regards to place, the further the location from home, especially if not visited before, the more dangerous that place was considered to be. Adolescents, especially males, felt that AAI's were inconvenient due to their bulky shape, however they were also considered a safety net and therefore adolescents generally continued to keep them on their person or nearby. Attitude towards risk of allergic reactions related to fear of anaphylaxis but also a minimization of the risk in a desire to be accepted. Peer attitudes and peer support affected the attitudes of the food-allergic individuals. Adolescents suggested a need for education of classmates, teachers and the wider community. Finally, food-allergic adolescents talked about a desire to be normal while being frustrated with the burden of the food allergy. This was also evident in balancing responsibilities with parents and a shift in attitudes as the adolescents increased in age.

Conclusions

Children in the UK transition to secondary school aged 11 years and leave secondary education at 18 years and during this time they experience a change in attitudes as they develop their allergic identity and learn to manage risks. This systematic review revealed a scarcity in research into attitudes of adolescents with food allergy. Additional research in this age group, who are considered the most at risk for potentially fatal allergic reactions, may provide further insights into ways in which attitudes have an impact on management of this long term condition.

POSTER PRESENTATIONS

Category: Adult Clinical

P.021

Investigating possible food allergy in armed forces personnel

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Objectives

The policy of the Armed Forces is not to recruit or commission personnel with existing medical conditions requiring special diets. If personnel develop food allergy during service they may be unable to be deployed, re-graded or discharged. The objective was to determine whether more investigations are undertaken to confirm a diagnosis of food allergy in Armed Forces personnel due to the impact this has on their career.

Method

49 patients were identified who were referred for investigation into possible food allergy and were either currently employed by the Armed Forces or undergoing their recruitment process. These were compared to 45 randomly selected non-military referrals. Data was collected retrospectively including clinical history, skin prick tests, specific IgE, oral food challenge, diagnosis and whether injectable adrenaline was prescribed.

Results

A confirmed diagnosis of food allergy was lower in the Armed forces group (57% vs 82%). All of the Armed Forces group had at least one investigation to investigate possible food allergy whereas 14% of the other group had a diagnosis made based on clinical history alone. 45% of the Armed Forces referrals had an oral food challenge compared with 2% in the non-military group. Of the Armed Forces referrals not diagnosed with food allergy, 76% underwent a negative oral food challenge, often despite positive skin prick tests and specific IgE. 53% of the Armed Forces group had a history of food allergy in childhood.

Conclusions

More investigations, especially oral food challenges, were undertaken in Armed Forces personnel to clarify the diagnosis of food allergy due to the employment implications. The increased use of oral food challenge in assessing food allergy may lead to fewer patients receiving an exclusion diet.

P.022

Relationship between response to grass pollen nasal allergen challenge and seasonal symptoms and the effect of treatment compliance

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Objectives

Good compliance with allergen immunotherapy treatment is important for optimal clinical efficacy. Here we evaluate the relationship between the response to grass pollen nasal allergen challenge (NAC) and symptoms during natural seasonal pollen exposure, and review the effect of treatment compliance.

Method

A randomised, double-blind, placebo–controlled trial of subcutaneous and sublingual grass pollen immunotherapy; *post-hoc* correlation of response to NAC with natural seasonal symptoms; relationship between NAC response and compliance with once daily tablets in the sublingual immunotherapy treatment arm, as measured by return of used and unused tablet blister packs.

Results

91.3% of completed participants took more than 50% of study tablets (protocol adherent), 75.0% took more than 75%, and 46.7% took more than 90%. Greater compliance with sublingual tablets was associated with lower NAC responses at years 1 and 2 (whilst on treatment) (r=-0.21, r=-0.46, respectively, the latter reaching statistical significance) and at year 3, 12-months after stopping treatment (r=-0.32). Positive correlations were seen between response to nasal challenge and each of seasonal visual analogue score, miniRQLQ and global evaluation at years 1 (r=0.22, p=0.02; r=0.25, p=0.01 and r=0.24, p=0.01, respectively) and 2 (r=0.32, p=0.002; r=0.33, p=0.002 and r=0.31, p=0.002). Correlations persisted at year 3, 12-months after stopping treatment, for all three outcomes (r=0.22, p=0.04; r=0.25, p=0.01 and r=0.42, p<0.001).

Conclusions

Good compliance to sublingual tablet immunotherapy is associated with reduced response to NAC. In turn, NAC responses correlate with seasonal symptoms during natural pollen exposure. These data support the use of nasal allergen challenge as a useful clinical surrogate in immunotherapy trials.

P.023

Development of freedom of symptoms of allergic rhinitis (SAR). A double blind placebo controlled study of nasally applied cellulose powder

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Objectives

Numerous clinical and experimental studies have shown that nasally applied cellulose powder can act as an efficient barrier to pollen allergens and is effective in reducing symptoms of SAR. In the present study of patients with low to moderate severity of SAR, a significant efficacy was found and this has been reported previously. During additional analyses, it was evident that the remarkable reductions in symptom severity included freedom from symptoms. The current work has the objective of exploring this aspect of the results.

Method

In a double blind comparative placebo controlled study, 107 subjects, 18-40 years of age, with allergic rhinitis due to grass pollen allergy used nasally applied cellulose powder or placebo 3 times daily for 4 weeks. Daily severity of sneezing, running nose, blocked nose, bronchial and ocular symptoms were reported every evening.

Results

The mean of severity scores was roughly halved in the active group for nasal ($p<0.0001$), ocular ($p<0.0001$) and bronchial symptoms ($p=0.0015$). Freedom from nasal symptoms increased and diverged markedly from placebo with time course ($p<0.0001$) and the level of freedom from other symptoms was about twice as common as in the placebo group over the entire period ($p<0.0001$).

Conclusions

The inert cellulose powder provided notable protection against all symptoms in upper and lower airways, both in terms of reduction of severity and development of freedom from symptoms. The latter was an attractive condition that appeared as a sensitive clinical trial outcome variable.

P.024

Adherence to BSACI guidance on drug allergy testing at a UK allergy centre

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Objectives

Standardisation of drug allergy management prevents errors, improves patient safety and allows comparison of outcomes.

Method

This retrospective audit evaluating drug allergy testing at the Royal Brompton Hospital, London from January 2015-April 2016 assessed the implementation of 3 relevant BSACI guidelines: drug allergy management (2009), penicillin and other beta-lactam allergy (2015) and anaphylaxis during anaesthesia (2010). We identified criteria and assessed patient demographics, risk factors for severity, adequacy of history (scored from 7 criteria), skin and challenge test outcomes and documentation, and documentation to prevent reactions.

Results

78 outpatients underwent drug allergy testing who had 105 separate reactions (18 patients having multiple reactions). 57/105 reactions were to beta-lactams: 49% to unknown penicillins, the most commonly identified were amoxicillin and co-amoxiclav. The next most implicated group was NSAIDs (14/105). 43% of reactions were immediate, 17% delayed, 18% unknown and 21% not documented. 39% were likely type 1 hypersensitivity, 35% unlikely and 26% unknown. 43% of required history questions were documented overall, with lowest documentation scores for concurrent medications, witness descriptions and photographs of the reaction. There were 4 positive skin prick tests and 7 positive intra-dermal tests. There were no positive skin tests for 4/5 patients with possible anaphylaxis during anaesthesia. 41 patients with beta lactam allergy underwent challenges, 24% to the index drug (NB: high number of unknown index drugs), with 2 positive reactions. For other drugs, 76% were challenged to the index drug, there were 33 challenges, 1 positive. All patients received written information, there was no documentation of MHRA notifications and for positive outcomes the drug allergy was highlighted in 55% of notes.

Conclusions

In our department with current BSACI guidance we have identified a need for improved documentation especially regarding clinical history and preventing further reactions. We have also identified local patterns of drug allergy to help develop guidance further.

P.025

Eosinophilic oesophagitis linked to pollen food syndrome: a case report

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CASE PRESENTATION

Background

High incidences of aeroallergen sensitisation and pollen food syndrome amongst adults with eosinophilic oesophagitis (EoE) raise the possibility of involvement of aeroallergens in the pathophysiology of this condition, although the cause and effect is unclear.

Case Presentation

A 38-year-old male presented with a 10-year history of dysphagia. EoE was confirmed histologically on oesophageal biopsy with a peak eosinophil count of 73 per high power field. Basal cell hyperplasia and eosinophilic microabscess formation were noted histologically as well as pseudo-trachealisation and linear furrows on oesophagogastroduodenoscopy (OGD). For 10 years he had consumed daily fresh fruit smoothies containing raw apple. Due to a history of pollen food syndrome and sensitisation to tree pollen, avoidance of raw fruit and smoothies was advised. No other dietary elimination was recommended. Three months later a repeat OGD and biopsy showed a complete histological response. Written informed consent was obtained from the patient for this case report.

Discussion

Regular exposure to pathogenesis related class 10 (PR-10) proteins from birch pollen cross-reactive foods appear to have been causative for this patient. PR-10 proteins are generally rapidly degraded by low pH and pepsin in the stomach, which may account for allergic inflammation localised to the oesophagus. A detailed allergy-focussed diet history should include exposure to relevant allergens, particularly in blended or liquid foods, with which the effective oesophageal allergen exposure may be greater than intact foods.

Conclusions

Cross-reactive foods, particularly the PR-10 family, should be considered as targets for exclusion diets in EoE. Although the role of testing for food-specific IgE responses in EoE remains controversial, investigation of pollen-food cross-reactive antigen sensitisation may have a role in the context of a suggestive clinical history.

P.027

Real world experience of Omalizumab for refractory chronic spontaneous urticaria

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Objectives

Audit of practice against current NICE guidance for initiation of Omalizumab for refractory CSU and monitoring of response to therapy. Assessment of additional locally derived criteria to explore response rate and response time in our patient cohort (27 patients).

Method

Retrospective audit April 2015 - June 2017 - single centre practice

Results

Cohort demographics are presented along with typical patient pathway. Overall good compliance with NICE guidance standards for selection and monitoring of patients initiating Omalizumab treatment. Good compliance with criteria for restarting and monitoring treatment in relapsed patients. The majority of patients respond rapidly to therapy (78% after dose 1) with improving overall response rates and rapid response rates (after dose 1) in subsequent treatment cycles.

Conclusions

The audit highlighted some inherent difficulties with UAS score monitoring and documentation in a busy clinic, which have led to the introduction of specially designed paperwork, which is presented. An expanding patient cohort over a short space of time has led to the development of an Omalizumab patient database, which has proven an invaluable audit tool. Treatment breaks as required by current NICE guidance are a significant source of stress and anxiety for patients, which in turn exacerbate chronic spontaneous urticaria. The poster discusses our current patient pathway and patient resources streamlining the process to restart therapy if patients relapse. Suggestions are made for collaborative audits within networks to enable further analysis of non-responders and differentiating them from late responders at an earlier stage in therapy and thereby potentially offering a cost saving.

P.028

Blue dye allergy: when blue is not blue

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CASE PRESENTATION

Background

Blue dyes used for sentinel lymph node biopsy (SLNB) are easily confused. Misidentification and incorrect documentation can lead to devastating consequences.

Case presentation

A 52-year old woman experienced generalized rash and unrecordable blood pressure 18 minutes after induction during wide local excision of a right breast lump and SLNB. Tryptase was 29.9ng/ml (6 hours). Methylene blue (MB) was documented in the drug list. Skin prick (SPT) and intradermal testing (IDT) with all suspected agents was negative. IDT with a 1:100 dilution of MB was negative.

Her anaesthetist was directly questioned regarding the possibility of mislabelled dye. It transpired that patent blue V (PBV), not MB was injected 15 minutes prior to cardiovascular collapse. Subsequent testing with undiluted PBV yielded a positive SPT of 7mm. IDT was also positive, with a 1:10 dilution of PBV caused wheal expansion from 5mm to 26mm with pseudopodia.

Discussion

MB is advocated as a "safer alternative" due to lower risk of systemic reactions. However, MB is less popular than PBV due to risk of local skin discoloration and necrosis, especially when injected too superficially. Unlike PBV, MB hypersensitivity reactions are exceedingly rare.

If the dye had not been questioned, this may have led life-threatening re-exposure to PBV, unnecessary avoidance or redundant/costly exhaustive provocation testing. Such "near-misses" are iatrogenic and completely avoidable. A multi-disciplinary approach based on close communication with surgeons and anaesthetists is crucial.

Conclusions

Diagnosis of intraoperative anaphylaxis relies heavily on the accuracy of the referral letters and surgical and anaesthetic records. A high level of clinical suspicion is important when faced with unusual or negative results. As MB is less frequently used and hypersensitivity extremely rare, we caution allergists/immunologists against suspecting this agent as a potential culprit unless other possibilities, including misidentification of the dye, have been excluded.

P.029

Experience of drug provocation testing in opioid allergy

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Objectives

Most reactions to opioids are due to direct mast cell degranulation, and IgE-mediated immediate hypersensitivity reactions are rare. Worryingly, many patients are labelled as opioid allergic without proper diagnostic evidence or allergy testing. This can not only lead to unnecessary drug avoidance, but other culprits of drug hypersensitivity reactions can be missed.

Our objectives were to evaluate the clinical characteristics and predictors of DPT-confirmed opioid allergy.

Method

We reviewed all available records of patients referred for suspected opioid allergy at Guy's and St Thomas' and Cambridge University Hospitals NHS Foundation Trust between 2008 and 2016.

All patients underwent DPT with the same opioid implicated in the index reaction, with protocols tailored to individual patients after risk stratification. DPT was positive if objective signs suggested an IgE-mediated response developed.

Results

Fifteen of the total of 98 (15%) patients referred were diagnosed with opioid allergy. Angioedema (OR: 5.66 [95% CI: 1.49-21.47], p=0.01) and hypotension (OR: 5.00 [95% CI: 1.15-21.70], p=0.03) were significantly more frequent in opioid allergic patients than those with a negative DPT.

Patients who received opioids during anaesthesia were significantly more likely to be opioid allergic (OR: 6.74 [95% CI: 2.05-22.13], p<0.01). In contrast, a negative association was identified with patients who received opioids for analgesia (OR: 0.27 [95% CI: 0.08-0.86], p<0.01).

All positive reactions were mild even in patients with history of severe anaphylaxis, and treated promptly with oral antihistamines and steroids. Administration of adrenaline or naloxone was never required.

Conclusions

Opioid allergy can be erroneously over-diagnosed without proper allergy evaluation - only 15% of our cohort were diagnosed after formal testing. DPT are safe when performed by experienced clinicians after risk stratification and individualized protocols.

Patients with a history of angioedema or hypotension, and had received opioids for anaesthesia (rather than analgesia) were significantly more likely to be opioid allergic.

P.030

Infusion reactions to rituximab in systemic lupus erythematosus: a retrospective analysis

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Objectives

Systemic Lupus Erythematosus (SLE) patients have limited biologic options. B-cell depletion with Rituximab (RTX) has been used since 2000 in the treatment of SLE. A rate limiting step in the use of RTX is the “attrition rate” due to apparent allergic reactions during the first or subsequent infusions. This can limits re-treatment with RTX in patients with a good response to an initial cycle of RTX and in whom other treatment options had previously failed.

Here, we identify the rates and patient characteristics of infusion reactions (IR) to RTX in patients with SLE.

Method

A retrospective analysis was undertaken of 136 RTX-treated SLE patients at University College London Hospitals. Patient records were examined to determine if there was a clinically significant IR for each RTX infusion. A descriptive analysis of the nature of the IR was recorded as was the decision making surrounding the infusions. Eleven patients (21 cycles) were excluded due to missing data.

Results

A total of 481 infusions of Rituximab in 125 patients (118 females) were reviewed.
16.2% of patients suffered IR. 25% IRs occurred with 1st dose, 67.9% with 2nd. 36% of patients suffered moderate to severe immediate IR. One patient died. Three were retreated, 2/3 had further clinically significant reactions and the third had two further cycles without issues. Most were not retreated.

24 RTX hypersensitivity reactions were categorized into immediate: unlikely immune mediated 4, likely cytokine release 7, likely immunoglobulin mediated 5, bone pain reactions 2 and delayed; early (24-48hours) 1 and late (>48hours) 5.

Conclusions

RTX is important therapeutic tool in treatment of SLE. The rate of IR to RTX in SLE is high, Better characterization of IR is necessary to increase the safety profile of RTX. This will require further research and MDT approach from both Allergists and Rheumatologist.

P.031

Magnesium sulphate allergy and subsequent tolerance to magnesium chloride in a patient with intestinal failure.

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CASE PRESENTATION

Background

Magnesium is commonly used in hospital medicine in treatment of eclampsia and preeclampsia, arrhythmia, severe asthma, and migraine.

Its utilisation is customary in patients with short bowel syndrome and intestinal failure, who often require intravenous magnesium sulphate ($MgSO_4$). $MgSO_4$ is also a routine additive in intravenous fluids for parenteral nutrition formulations.

In spite of its frequent use, reports of allergic reactions to the compound are very rare.

Case presentation

We present a case of a 40-year-ol female with a background of ileostomy and intestinal failure, who developed allergic reactions (skin flushing, skin rash, lip angioedema and throat tightness) to intravenous $MgSO_4$ infusions, which precluded its further use.

Allergy work up was performed: she tested negative to neat MgSO4 skin prick and positive at intradermal testing at 1:100 (non-irritant concentration). Suggesting possible IgE mediated mechanism. Skin testing was repeated with Magnesium Chloride (MgCl2). Patient tested negative to MgCl2 neat skin prick test and to intradermal testing at the same concentration. Subsequently, magnesium chloride infusion was performed and well tolerated with no evidence of allergic reaction

Discussion

Allergic reactions to $MgSO_4$ are very rare (only 3 cases described in the literature), however, when suspected pose a significant problem for patients and their clinicians. Literature review suggests that skin prick testing alone is insufficient in its assessment.

Conclusions

Following careful allergological review and skin testing, including intradermal testing, $MgCl_2$ may represent a safe alternative in patients with allergy to $MgSO_4$.

P.032

Study of impact of allergen immunotherapy using Pollinex Quattro® tree and/or grass pollen on patients with allergic rhinoconjunctivitis

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Objectives

More than 20% of the British population are affected by allergic rhinitis/conjunctivitis which, if untreated, can cause a significant reduction in quality-of-life. Allergen immunotherapy is reserved for patients with moderate/severe IgE-mediated disease, who do not respond to conventional pharmacological interventions, aiming to improve symptoms/quality-of-life and instigate long-standing tolerance. We aimed to assess the impact on symptoms and quality-of-life of patients with allergic rhinoconjunctivitis on completion of three years of treatment with Pollinex Quattro® tree and/or grass pollen pre-seasonal immunotherapy.

Method

A study of all patients with moderate/severe allergic rhinitis/conjunctivitis, not responding to optimised conventional treatment, who completed a three-year course of immunotherapy at our Allergy Centre to tree and/or grass pollen from 2011 to 2016. Patients completed validated questionnaires - SNOT-22 and RQoLQ - at baseline (B) and end-of-treatment (Y3). Data were analysed using IBM-SPSS statistical package (Wilcoxon test).

Results

Twenty-seven patients completed immunotherapy within the above period but data was available for 25. Male/female ratio was 0.67; median age 35.9 (min 21- max 52) years. All patients had rhinoconjunctivitis apart from 1 with rhinitis only, and 15 (60%) had asthma. Seventeen patients (68%) received immunotherapy for grass pollen, 1 (4%) for mix-tree pollen and 7 (28%) for birch and grass pollen.

Full set of B and Y3 SNOT-22 scores was available for 14 patients. Y3-SNOT-22 scores were significantly lower than B scores: B -SNOT-22 median 51 (22 - 97) *vs.* Y3 SNOT-22 median 21 (1-54), p=0.005; 11 patients had symptom improvement.

Full set of B and Y3 RQoLQ scores was available for 13 patients. Y3-RQoLQ scores were significantly lower than B scores: B -RQoLQ median 122 (23 - 146) *vs.* Y3-RQoLQ median 35 (4-100), p=0.006; 11 patients had quality-of-life improvement.

Conclusions

This real-life study confirms that pre-seasonal tree/grass pollen immunotherapy is very effective in improving symptom control and quality-of-life in patients with moderate/severe allergic rhinoconjunctivitis.

P.033

Recurrent uvular swelling due to infection with Fusobacterium necrophorum

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CASE PRESENTATION

Background

Throat swelling is a common reason for referral to the allergy clinic. The differential diagnosis is large and includes non-allergic causes. Our objective is to report a case where chronic infection was mimicking an allergic reaction.

Case Presentation

A 35 years old overweight man was referred to the allergy clinic with a recent history of "throat and uvular swellings" occurring mainly in the evenings and thought to be caused by food. One of the uvular swellings was described as "ulcerative" by the GP. The patient also reported night-time snoring leading to poor rest and was awaiting sleep studies. He had a history of mild hay fever for which he was on no medication. He had no asthma or eczema.

Discussion

The patient could not identify any specific foods in relation with his symptoms. SPT was positive to tree pollen 5 mm and grass pollen 6 mm. Complement C3 and C4 levels were normal and CRP was 6 mg/L. Throat examination revealed very large tonsils (grade 3). Bacterial swab was taken and MC&S result evidenced Fusobacterium necrophorum. On advice from microbiology the patient was prescribed a 3 weeks course of clindamycin which he is currently finishing, to eradicate Fusobacterium.

Conclusions

Here we report a case of chronic tonsillitis driven by Fusobacterium necrophorum presenting with throat and uvular swelling and possibly sleep apnoea and confused with food allergy.

Fusobacterium necrophorum infection is an emerging cause of sore throat in young adults. It can be limited to the throat and cause persistent or recurrent tonsillitis. It requires eradication because of the risk of "necrobacillosis" or Lemierre's syndrome characterised by septic thrombophlebitis of the internal jugular vein, a septicemia with septic emboli.

In summary, it is worth considering anatomical causes and/or chronic infections in patients referred with unusual history of throat swellings to the allergy clinics.

P.034

Omalizumab treatment for chronic spontaneous urticaria - an audit against NICE and local Trust guidelines

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Objectives

Omalizumab was introduced at SWBH Trust to treat chronic spontaneous urticaria when patients met specified criteria. This audit examined compliance with treatment indications against NICE and Trust guidelines, and treatment outcomes.

Method

Data from patients who commenced omalizumab treatment between June 2015 and January 2017 were analysed.

Results

Evaluable data were retrieved for 42 patients. Eleven had undergone two treatment courses, resulting in 53 datasets. 35 (66%) were female; 18 (34%) were male. Ages ranged from 20-84 years (mean 42.9 years). Omalizumab is indicated for treating severe spontaneous urticaria when the severity is assessed objectively, e.g. using a weekly urticaria activity (UAS7) score of 28 or more (NICE guidelines). All patients met this criterion.

Omalizumab is indicated when the patient's condition has not responded to standard treatment with both H1-antihistamines and leukotriene receptor antagonists (NICE guidelines). Trust guidelines specify using omalizumab when the condition has not responded to high dose H1-antihistamines or leukotriene receptor antagonists. 83% of patients met both guidelines.

In 91% of cases, an appropriate response (UAS7 score <16) was seen at dose 4. All remaining cases met the exception criteria justifying treatment continuation. NICE criteria were met in all cases.

Of those who completed the full 6-dose course, 15 (50%) had mean UAS7 scores of 0; all but one patient (97%) had UAS7 scores averaging <16.

75% of patients reported no adverse effects; the remainder complained of minor short-lived problems. Treatment was stopped in two cases (4%).

Conclusions

Compliance with both NICE and Trust guidelines in commencing and continuing omalizumab treatment was good. Omalizumab treatment for chronic spontaneous urticaria appeared highly efficacious and was well tolerated.

P.035

Bamboo shoot anaphylaxis

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CASE PRESENTATION

Background

Bamboo (*Phyllostachys pubescens;* grass family P*oacae)* is closely related to wheat and maize. Its edible shoots are popular in Asian cuisine.

Case presentation

A 28-year-old male had Singapore noodles with vegetables. Within minutes he developed generalised erythema, pruritus, hand, tongue and facial angioedema, wheeze and throat tightness. He was treated with adrenaline, steroids, antihistamines and salbutamol. His acute tryptase was 14 mcg/l. A list of allergens provided by the canteen included wheat, soya, sesame, eggs, cereals and celery. On further questioning it transpired that the noodle dish contained bamboo shoots. Patient then recalled a previous mild reaction to edible bamboo (pruritic chest erythema). His medical history included hay fever but no urticaria. In clinic, his baseline tryptase was 4.20 mcg/L; skin prick test (SPT) with cooked bamboo was positive at 6 mm with specific IgE of 0.34 kUA/L. Other specific IgE (kUA/L): 0.15 celery; 0.05 omega-5-gliadin; 0.69 wheat; 1.12 maize; 22 grass pollen mix.

Discussion

Bamboo plants can trigger occupational allergy and contact dermatitis. Bamboo sIgE have been reported in patients with atopic dermatitis, rhinitis and asthma. However to the best of our knowledge there have been no published cases of bamboo shoots anaphylaxis. Our patient’s multisystem presentation, positive SPT to bamboo and increase in acute tryptase from 4 to 14 mcg/L suggest IgE-mediated anaphylaxis. He was advised to avoid only bamboo as he was fully tolerant of all other foods including those with positive sIgE.

Conclusions

Bamboo shoots can be responsible for anaphylaxis. Education of the allergy community is crucial to avoid missing this potential new trigger of anaphylaxis

P.037

Outcomes of patients referred to Brighton & Sussex University Hospitals NHS Trust Allergy Clinic

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Objectives

The field of nut allergy has progressed over the last decade to emphasise personalised advice of selective nut-avoidance, guided by risk-stratification and component-resolved diagnosis. This project reviews the outcomes of patients referred with possible nut allergy to the Allergy Clinic at Brighton and Sussex University Hospitals NHS Trust.

Method

Clinic letters were searched over a short period in 2016-2017 to identify 27 consecutive patients whose primary reason for referral was possible peanut or Trent allergy. Individual patient outcomes following the consultation were recorded, which included final diagnosis (no nut allergy, true primary nut allergy, PR-10 protein-related pollen food syndrome or nsLTP allergy), change in nut avoidance (selective versus blanket) and recommendations for adrenaline auto-injectors.

Results

Diagnosis was achieved using clinical history (all patients), skin prick testing (n=24), serology (n=21), CRD (n=13) and oral food challenge (n=2). Of the 27 patients, 37.0% had true primary nut allergy, 22.2% had pollen-food syndrome related to PR-10 protein sensitisation and 7.4% had nut allergy related to nsLTP sensitisation. Seven patients (25.9%) had no nut allergy at all. The final diagnoses in patients without nut allergy included spontaneous angioedema, spontaneous urticaria, and panic attacks. Accurate nut diagnosis allowed 74.4% of patients to expand their dietary repertoire of nuts. Adrenaline injectors were withdrawn from some patients and prescribed for others based on confirmation from diagnostic testing. Four patients with confirmed primary nut allergy (14.8%) were prescribed adrenaline for the first time, potentially saving them from future life threatening reactions. Five patients (18.5%) had adrenaline removed as they had a milder form of nut allergy. Therefore, the overall proportion of recommended adrenaline auto-injectors remained similar.

Conclusions

Specialist assessment of potential nut allergy had a major impact on patient outcomes, including selective nut avoidance, more targeted provision of adrenaline auto injectors and in some cases, withdrawal of the diagnosis altogether.

P.038

Anaphylaxis due to synthetic folic acid

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CASE PRESENTATION

Background

Synthetic folic acid is an over-the-counter supplement that is often present in multivitamins and Vitamin B complex preparations. We report a case of systemic anaphylaxis after folic acid ingestion.

Case presentation

78 year old male patient became symptomatic 30 minutes after his first dose of folic acid, a 5 mg tablet taken by mouth. He manifest with swelling of the face and tongue, and an urticarial rash over the abdomen, legs and hands. These symptoms were followed by dizziness. The patient was hypotensive when reviewed by paramedics. He was resuscitated, treated with adrenaline, anti-histamines and corticosteroids, and admitted to hospital. It was subsequently noted that the patient has developed a cold right leg. Investigations identified abdominal and iliac artery aneurysms. The symptoms of vascular insufficiency were likely precipitated by hypotension. The patient was discharged on anticoagulation and advised to avoid folic acid. In the Allergy clinic, skin prick testing to the folic acid, suspended in normal saline, produced a positive response. This patient was advised to avoid synthetic folates including folic acid tablets and other multivitamins or vitamin B complex preparations.

Discussion

IgE-mediated reactions to synthetic folic acid are rare but have been reported to oral and parenteral folic acid. Hypersensitivity reactions to synthetic folic acid are not associated with reactions to natural folate. Other reports have demonstrated cross-reactivity between folic acid and folinic acid (leucovorin). Patients with folic acid hypersensitivity should be advised to avoid folinic acid and folic acid-containing vitamin supplements.

Conclusions

This case demonstrates the need to consider hypersensitivity to synthetic folate as a cause of anaphylaxis.

P.039

Subclinical infection- a neglected trigger of chronic spontaneous urticaria?

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CASE PRESENTATION

Background

The role of infection as a potential trigger for urticaria has been described for over a century. However, current Chronic Spontaneous Urticaria (CSU) guidelines do not recommend routine screening for underlying infections. We report two patients with severe CSU who experienced rapid remission following the treatment of dental sepsis (case 1) and eradication of *Helicobacter pylori* (case 2).

Case presentation

Case 1: A 20-year-old male presented with a 5-month history of urticaria and angioedema. He recorded weekly Urticaria Activity Scores (UAS7) of 30 despite treatment with high dose of antihistamines plus montelukast. Anti-IgE therapy (with Omalizumab) was offered. In the interim, he presented to his dentist with a broken tooth and was found to have decaying molars requiring cleaning and root canal treatment. One week after this intervention, his UAS7 score fell to 4 and then 0. He has remained in remission for 9 months.

Case 2: A 70-year-old male was seen with a 6-month history of worsening urticaria and angioedema unresponsive to high dose antihistamine, montelukast and courses of steroids. His UAS7 score was 27 and anti-IgE therapy was offered. Questioning had elicited a history of diarrhoeal symptoms preceding the urticaria, and intermittent bowel symptoms thereafter. Stool test was positive for *Helicobacter pylori*, and eradication therapy resulted in a rapid resolution of urticaria.

Discussion

Most reported cases of chronic urticaria associated with chronic infection are related to gastrointestinal and dental/ENT infections. A number of studies have demonstrated CSU remission after *H.pylori* eradication and at least 8 cases of complete remission of CSU following treatment of dental infections have been reported.

Conclusions

Standard CSU treatment is often prolonged and not without risk. These cases illustrate the importance of considering subclinical infection as treatment may lead to rapid resolution and improvement of quality of life.

P.040

Penicillin test and challenge outcomes at Salford Immunology department

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Objectives

Review penicillin allergy investigation outcomes at local practice, to inform our current practice.

Method

Medical records of all our allergy patients who underwent penicillin allergy investigations from Jan 2015 to May 2017 were reviewed.

Results

Total of 44 patients were included. 3 patients were positive for serum SIgE amoxicillin and 1 patient was positive for SIgE penicilloyl V and SIgE penicilloyl G. 4 patients had positive intradermal test (IDT) and 1 patient had positive skin prick test (SPT) (prior to skin tests: 4 except 1 of these patients had SIgEs tests). 7 patients who underwent oral penicillin challenge developed immediate reaction (prior to oral challenge: 5 patients had both SIgEs and skin tests; 1 patient had only SIgEs; 1 patient had not had SIgEs or skin test). Five patients developed dermatological symptoms, 1 patient developed respiratory symptoms and another patient had peri-arrest. Another 2 patients developed delayed reaction (1 patient had generalised rash; 1 patient had lip swelling) to oral penicillin challenge. The remaining 26 patients were negative to oral challenge. Patients with positive SIgE tests or SPT appeared to have history of more acute severe systemic reaction to penicillin, compared to patients with positive IDT. Patients with positive IDT appeared to have history of more severe reaction to penicillin, compared to patients with positive oral challenge. Majority of patients with negative oral challenge presented with unclear or distant past history of being labelled as penicillin allergy.

Conclusions

SIgE penicilloyl G, SIgE penicilloyl V, SIgE amoxicillin and SPT likely to be positive in patients with history of anaphylaxis. However, one of our patients still developed severe reaction to oral penicillin challenge even though the SIgE penicillin and skin testing were negative, without clear history of anaphylaxis. Hence, penicillin challenge is still needed to confirm or rule out immediate penicillin allergy in this situation.

P.041

Concomitant tuna allergy in chicken meat-allergic patient: a case report

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CASE PRESENTATION

Background

Chicken meat allergy is rare and may present as primary food allergy or secondary in the context of bird-egg-syndrome or concomitant sensitization to bird feather. The prevalence of allergy to poultry meat is unknown as published data are limited. A link between allergy to poultry meat and fish allergy has been recently suggested.

Case Presentation

We report a case of a 23-year-old male who developed throat tightness with shortness of breath and dysphagia immediately after ingesting chicken meat. His symptoms lasted for twenty minutes and subsided without treatment. He subsequently developed similar symptoms after eating foie-gras (goose liver) and tuna. He reports a long history of mild oral reactions when eating chicken meat, but he used to tolerate tuna. He can tolerate hen's egg, salmon, mackerel and cod. Skin prick tests were positive to chicken and tuna, and borderline to duck liver pâté. Specific IgE revealed positive test for chicken (2.10 kUA/L), turkey (0.45 kUA/L) and tuna (3.0 kUA/L). Specific IgE results were negative (<0.35 kUA/L) to turkey feather, goose feather and duck feather.

Discussion

Chicken meat is highly cross-reactive with other poultry meats, especially turkey meat, whereas duck and goose meat causes usually milder symptoms. Simultaneous allergy to poultry meat and fish has been recently described mainly to cod. The major allergens in chicken meat are heat-resistant proteins some of which have been identified as α-parvalbumin, myosin light chain, aldolase and enolase. Which allergen is responsible for cross-reaction with tuna is yet to be elucidated.

Conclusions

This is the first reported case of a chicken meat-allergic patient developing symptoms after tuna ingestion. Patients with allergy to chicken meat should be studied not only for potential cross-reactions amongst poultry meat products but also for potential cross-reactions with fish.

P.042

Intradermal testing is helpful in confirming delayed cutaneous adverse reactions to iodinated radio contrast media and in identifying low risk alternatives

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CASE PRESENTATION

Background

Iodinated radio contrast media (RCM) were introduced in the 1920s and their tolerability has greatly improved over time with the introduction of non-ionic compounds of osmolality close to that of serum. They are now one of the safest and most widely used pharmaceutical products.

Nevertheless, adverse reactions still occur and are divided into acute (within 1 hour) and delayed (more than one hour after administration) reactions. The frequency of adverse reactions to non-ionic compounds is estimated at 0.4% but only a tenth described as severe.

We describe 3 patients with a history of severe delayed cutaneous reactions to RCM in whom the diagnosis of a T-cell mediated reaction could be confirmed by positive delayed intradermal tests to the culprit RCM and low risk alternatives identified for future use.

Case presentation

3 patients with a history of delayed cutaneous reactions after administration of the non-ionic monomers Iopadimol (patient 1), Iohexol (patient 2 and 3) and the non-ionic dimer Iodixanol (patient3) were investigated with skin prick and intradermal testing to all common iodinated RCM.

Skin prick tests and immediate intradermal test were negative in all patients. Delayed intradermal tests were positive to the culprit RCM in all patients. Delayed intradermal tests were negative to alternative non-ionic RCM in patient 1 and 3, but patient 2 showed extensive cross reactivity and the only RCM with a negative test result was the ionoc monomer Sodium Diatrizoate.

Discussion

Although RCM are safe and well tolerated by the majority of patients, adverse reactions occur. Most of these are attributed to the pharmacological properties of RCM, but a proportion is immune mediated. Both acute, igE mediated anaphylaxis as well as delayed, T-cell mediated reactions have been described.

Skin testing has been reported as both sensitive and specific and was able to confirm an immune, T-cell mediated, delayed reaction to culprit RCM in our patients. Two patients showed cross reactivity both in vivo (patient 3) and in vitro (patient 2 and 3).

Reports of small cohorts of patients who had experienced delayed cutaneous reactions to RCM and where this was confirmed by positive delayed intradermal testing, suggest that negative delayed intradermal tests to alternative RCM had greater than 90% negative predictive value, greatly reducing the risk of further adverse reactions, should patients require RCM again in future.

We were able to identify an alternative RCM in all 3 of our cases

Conclusions

Intradermal testing to RCM was able to confirm the immune mediated adverse reaction to the culprit drug in all patients. In addition cross reactive RCM and low risk alternatives were identified. The procedure was well tolerated and apart from local discomfort patients did not suffer any adverse

reaction. Although initial reports of the negative predictive value of intradermal tests are encouraging, this needs to be confirmed in larger cohorts. To date none of our patients has received RCM again.

P.043

Combined treatment with Omalizumab and Ciclosporin in a patient with severe chronic spontaneous urticaria

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CASE PRESENTATION

Background

Chronic spontaneous urticaria (CSU) is a common and in some cases debilitating condition defined by the daily presence of itchy hives, with or without associated angioedema, for a minimum period of six weeks. A number of patients do not achieve adequate symptom control with first line treatment with high dose antihistamines (AH) alone or in combination with leukotriene receptor antagonists (LTRA).Therapeutic options in such cases include systemic immuno suppression with Ciclosporin or Omalizumab a humanized anti immunoglobulin E (IgE) monoclonal antibody.

Case presentation

We describe the case of a 41 year old female who first presented with severe CSU in 2011. Poor symptom control despite treatment with high dose AH and LTRA (Montelukast) resulted in her starting Ciclosporin (2.5 - 3 mg/kg). This achieved partial symptom control with a mean weekly urticaria activity score (UAS-7) of 25. She continued with this treatment until 2014. Renal function tests remained normal, but she developed hypertension and the decision was made to commence Omalizumab (300 mg s.c. monthly). On a combination of Ciclosporin and Omalizumab symptom control was excellent with UAS7 scores of 1 - 3. However, when Ciclosporin was reduced and then stopped after 2 months of Omalizumab, symptom control deteriorated (mean UAS-7 of 27).

After a further month the decision was made to restart Ciclosporin at low dose (1 mg/kg) in addition to continued treatment with Omalizumab. This led to greatly improved symptom control with a mean UAS-7 of 11 in the week prior to the Omalizumab injection, with hardly any symptoms in the weeks following the injection.

The patient continues on this regimen to date. She has not suffered any adverse reactions and remains well.

Discussion

The divergent mechanism of action of the two medications may explain their apparent synergistic effect in this case. Omalizumab targets the effector cell (mast cell) by preventing binding of IgE to its high affinity receptor. It also prevents binding of IgE to its low affinity receptor (CD23) on B-cells. This could result in reduced B-cell activation and possibly reduced auto antibody secretion. In a proportion of patients with CSU, including our patient, auto-antibodies to the high affinity receptor for IgE are pathogenetic.

Ciclosporin on the other hand targets T-cell mediated immunity thereby suppressing T-cell dependent B-cell activation and possibly reducing a secondary inflammatory response following mast cell activation.

Conclusions

To our knowledge this is the first report of long term use of a combination of Ciclosporin and Omalizumab in a patient with CSU. It suggests a potential role for combined treatment in the most severe cases of CSU where symptom control could not be achieved with either treatment alone. However, the treatment so far has not achieved a lasting remission and we have not been able to

stop treatment. Although the patient remains well, concern remains over potential long term side effects of dual immunosuppression.

P.044

A rare case of occupational contact allergy due to multiple tropical plant species diagnosed by patch testing

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CASE PRESENTATION

Background

Allergic contact dermatitis is a delayed type IV cell-mediated hypersensitivity. Numerous plants and plant allergens have been identified over the years as causing allergic contact dermatitis. Here we describe a rare case of occupational contact allergy due to multiple tropical plant species diagnosed by comprehensive patch testing in our Allergy Clinic.

Case presentation

A 25-year-old female horticulturist was assessed for a 10 month history of recurrent episodes of severe acute erythematous papulovesicular dermatitis affecting exposed areas of skin, occurring only after contact with various tropical plant species at her workplace. The eruptions typically developed around 48 hours after direct contact with the plants and lasted one week before resolving. She received several courses of Prednisolone. The patient worked with multiple tropical plant species on a regular basis, making exact identification difficult.

We performed patch testing with the British Standard Series (& Plant Series) which was completely negative. Patch testing to 12 implicated tropical plants, however, revealed strong positive reactions (erythema, papules, vesicles ++/+++) at Day 4 to *Mangifera indica, Abroma augustum, Hibiscus tiliaceus* and *Philodendron radiatum*. Patch testing of control subjects was negative. After returning to her work environment she avoided exposure to these plants which led to a complete resolution of her symptoms.

Discussion

The patient was diagnosed with occupational allergic contact dermatitis due to *Mangifera indica* (mango), *Abroma augustum, Hibiscus tiliaceus* and *Philodendron radiatum*; based on the clinical history and strong patch test results. There has only been one prior report on Hibiscus contact allergy and we describe the first case of *Abroma augustum* allergic contact dermatitis. Polysensitisation to these four tropical plant species has also not been described previously. Multiple plant allergens or even a common cross reactive allergen could potentially be implicated.

Conclusions

This report highlights the importance of a comprehensive and structured approach to investigating suspected plant contact dermatitis.

Category: Paediatric Clinical

P.047

Developing the south east London guideline for the management of cows' milk protein allergy in primary care

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Objectives

Nutrition products are a key area of spend in SE London. Cows' milk protein allergy (CMPA) affects 2-3% of infants. Incorrect management leads to increased prescribing costs, prolonged food avoidance and inappropriate referrals. Symptoms vary and are confused with lactose intolerance and GORD. Guidance was needed to support primary care management and selection of the most appropriate formulas for CMPA.

A primary care guideline for the management of CMPA was a priority for Lambeth and Southwark CCGs in 2012. The first guideline was published in 2013 and due for revision in 2016. A SEL Area Prescribing Committee guideline encompassing 6 SE London CCGs (Lambeth, Southwark, Lewisham, Bromley, Greenwich and Bexley) was needed.

Method

A multidisciplinary guideline development group was established, consisting of paediatric allergists in secondary and tertiary care, a primary care physician, dietitians and pharmacists across six CCGs. Evidence was reviewed and the guideline revised. Diagnosing IgE and non-IgE mediated CMPA, continuing breastfeeding, prescribing cost-effective formulas and criteria for referral to allergy and dietetic services were outlined and summarised in an algorithm. It included appendices on GOR and lactose intolerance and signposting to patient support organisations. The draft guideline was published for comment from local GPs, dietitians, allergists and CCG pharmacists.

Results

The guideline was approved by the SEL Area Prescribing Committee, launched in March 2017 and published on CCG websites. Education sessions are being run to inform community practitioners about the guideline. It will be adapted for use in hospital emergency departments, where CMPA is often identified and replacement formula initiated. The aim is to increase the EHF to AA prescribing ratio.

Conclusions

A primary care CMPA guideline has been successfully developed by collaborative efforts from NHS Trusts, primary care and community services across six CCGs. Its effectiveness and feedback from professionals using it has yet to be evaluated.

P.048

Challenge positive NSAID allergy in children presenting with NSAID reactions

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Objectives

Hypersensitivity to non-steroidal anti-inflammatory drugs (NSAIDs) is poorly documented in children. We aimed to review the outcomes of Oral Provocation Tests (OPTs) for NSAIDs performed at a Paediatric Allergy Centre

Method

Children undergoing OPTs to NSAIDs (Ibuprofen and Aspirin) were identified from the Allergy Day Ward Challenge database from Jan 2009 - August 2016. Electronic notes, clinical letters and discharge summaries were reviewed. Data was collected regarding demographics, history of reactions, atopy history and outcome of OPT.

Results

25 challenges were performed in 29 children (78% male). Age range 1 - 16 years, median 7 years. Presenting reactions in this cohort included 5 patients with anaphylaxis, 6 with rash alone, 3 patients with angioedema and rash, and 6 with angioedema alone. We were unable to determine original presenting reaction in 3 cases. In one case the patient was known to react to ibuprofen and an aspirin challenge was undertaken. In another patient a challenge was undertaken for parental anxiety. There were 6 positive challenges (24%), 5 ibuprofen and 1 aspirin, and one outcome was undetermined. The presenting reactions in these patients were angioedema in 5 cases and 1 had anaphylaxis to ibuprofen (swollen face and tongue and difficulty breathing). Following challenge, 1 patient had anaphylaxis (not original reaction) to aspirin and the other 5 had angioedema. The majority of positive challenge patients were atopic (85%). 18 patients had negative challenges (16 ibuprofen and 2 aspirin).

Conclusions

The incidence of confirmed NSAID allergy in children presenting with a history of reacting to NSAIDs was 24% in this group of patients. One patient had anaphylaxis and five patients had cutaneous reactions. This is higher than the incidence of confirmed beta lactam allergy in our clinic.

P.049

The user experience of nasal douching in children with moderate to severe hay fever and poor nasal steroid compliance: observational data from a paediatric allergy clinic

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Objectives

The moderate to severe Hay-fever symptoms require steroid nasal spray as standard treatment as recommended by BSACI/ARIA guidelines; however, patient compliance may be an issue. This study explored the effect of nasal douching in the paediatric age group with poor compliance.

Method

The data was collected over two years in 30 children (age - eight years or above) with seasonal (n=21) & perennial (n=12) hay-fever reporting moderate to severe symptoms (ARIA Classification). Patients with ability to self-administer nasal douching were advised to use it at least twice daily. The symptoms were carefully monitored, and user experience was recorded during the routine follow-up visits. The patients with developmental delay were excluded.

Results

18/30 patients (7 perennial & 11 seasonal) used nasal douching regularly alongside Cetirizine. Of the remaining 12 cases, six were lost to follow-up, four decided to stop nasal douching (didn't like the experience), and two used it intermittently (only during severe symptoms). 16/18 reported a reduction of early morning sneezing, daytime tiredness, episodes of the nasal block and duration of rhinorrhea as well as better quality sleep. 2/18 reported less frequency of nasal bleeding and 17/18 reported fewer episodes of sneezing and cough during the day-time. None of them opted for steroid nasal spray when offered during follow-up visits and preferred to stay on long-term nasal douching. All users felt that the nasal douching was convenient to use. 6/18 patients used it more than two times per day for quick symptomatic relief. There were no side effects reported.

Conclusions

The nasal douching is an effective treatment for symptomatic relief in paediatric Hay-fever. The option for nasal douching should be offered routinely in children with moderate to severe Hay-fever symptoms as an adjuvant therapy, in particular for those cases who are poorly compliant to steroid nasal spray.

P.050

The safety and practicality of introducing peanut protein early to infants with either, or both, eczema (EC) or egg allergy (EA) in routine clinical practice

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Objectives

The Learning Early About Peanut (LEAP) study finding that infants with EA and/or EC with negative or low level skin prick (SPT) peanut sensitisation who start eating peanut early and regularly have markedly reduced chances of peanut allergy has significant implications for public health and also allergy service providers. Recent American Academy of Paediatrics endorsed guidelines support the practice of early peanut introduction after SPT for such high risk infants using either "home or physician-supervised feeding". Our study evaluated whether either, or both, approaches are safe, feasible and acceptable to parents of such infants aged <12 months referred to an NHS paediatric allergy service.

Method

Retrospective data analysis from medical records of infants attending our Allergy Service who had home or clinically-supervised peanut introduction from Aug 2015- May 2016.

Results

30 infants (18M:12F) met peanut introduction criteria. 8 (initial peanut SPT 0 mm) opted for home introduction; follow up data was available from 6 - all successfully tolerated this but some deferred peanut introduction for up to 3 months. 22 (initial peanut SPTs 0-4mm) had clinically-supervised peanut introduction; 4 of these - no distinct phenotypic markers (EC:EA:EC/EA = 2:1:1; SPT 0-4mm; M:F 3:1) - had mild urticarial reactions with no systemic features (all to < ¼ tsp of peanut butter). The median interval from decision to supervised introduction for these four was 114 days. 1 infant (EC, SPT 1mm) tolerated peanut during supervision period but had had a reproducible delayed GI reaction (vomiting + diarrhoea within 12 hours). Parents reported significant anxiety about continuing with peanut at home despite safe introduction.

Conclusions

Whilst home introduction may obviate possible logistic delays of supervised challenges and both appear to be safe - apart from a small chance of immediate cutaneous reactions (and, rarely, delayed GI reactions) - some parents may delay or avoid peanut introduction and all need easily accessible staff support.

P.051

Telephone follow up and outcomes in children's allergy outpatient department

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Objectives

Outpatients in the Children's Allergy Service at St Thomas' Hospital are seen by a team of Consultants, Specialist Registrars (SpR)/Fellows, Clinical Nurse Specialists (CNS) and visiting clinicians. Patients who are not discharged after their consultation can be followed up by telephone or in person. We conducted an investigation into discharge rates, method of follow up, and coding of patient types to identify if patient follow up is being optimised across all staff groups.

Method

498 patient follow-up records were gathered over a four week period, between 18th January-15th February 2017. Data was analysed according to various categories: percentage of patients discharged, follow-up via telephone and in person, and follow up for patients who 'did not attend' their appointment. Results were categorised based on staff group: Consultants, Specialist Registrars (SpR) /Fellows, Clinical nurse specialists (CNS) and visiting clinicians.

Results

The overall rate of discharge was 52%. Consultants had the highest percentage of discharges (61.4%) and visiting clinicians had the least (0%). Overall, 19% of follow-ups were by telephone. Clinical nurse specialists were the most likely to follow up patients via telephone (36% telephone follow up rate), followed by Consultants (23%), and SpR/Fellow (9%). Visiting clinicians did not follow up any patients by phone. Of the 24 patients who did not attend their appointment, 29% were followed up (10% by telephone).

Conclusions

Consultants had the highest discharge rate. Generally, patients were much more likely to be followed up in person than via telephone, especially among SpRs, Fellows, and visiting clinicians. While further analysis (including patient condition as a factor in type of follow up) is required, this may indicate an opportunity to broaden the utilisation of telephone follow ups among these groups. A follow up investigation will be carried out to assess how practices change over time.

P.052

Management of the allergic child at school – a parental perspective

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Objectives

To gain an insight into parental feelings regarding the management of their child's allergies at school, as well as to identify any gaps in care provided.

Method

An audit was performed to obtain data, using an anonymous questionnaire. This was given to all parents of primary school children attending the Paediatric Allergy outpatient and inpatient challenge unit. 39 responses were obtained.

Results

Majority of the respondents reported that their child had never had an allergic reaction at school.

32 respondents stated that their child had an allergy management plan at school. These management plans were prepared by the Allergy department the child was seen in, the school, school nurse or jointly by the parent and school.

Whilst many parents acknowledged that it was their responsibility to ensure that all emergency medications provided to the school were in date, a few reported this as a joint responsibility, and a minority stated that this was the school's responsibility.

Many parents were uncertain whether their child's medications at school were locked or unlocked. The results showed that some emergency medications continue to be locked at some schools.

It was encouraging to find out that despite their child's allergies, many parents felt that their child could participate in all school activities, and were confident with catering staff providing allergen free, nutritious and varied foods for their child. Additionally, majority of the parents felt that they had a good, collaborative relationship with the school, to ensure that their child was kept safe at school.

Conclusions

Management of the allergic child at school requires collaborative working between the school, the hospital, community school nurse as well as parents. Evidence of this was found through the audit. Certain areas requiring improvement have been highlighted. To achieve desired outcomes, education remains vital to inform families, schools and other healthcare providers to ensure that the school setting is a safe place for children with allergies.

P.053

Assessing and addressing mental wellbeing in adolescents and their parents with multisystem allergic disease; a pilot study

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Objectives

Understanding and measuring health and wellbeing amongst adolescent patients has become a national priority. This increasing focus has created the need for validated scales to monitor wellbeing and evaluate targeted interventions. A combination of group (digital storytelling workshops) and individual level interventions (qualitative interviews) evaluated the responsive of the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS), and verbal communication health behaviours as outcome measures in improving wellbeing in adolescents with allergic disease.

Method

Patients (N=6) age 13-18 years with multi-system allergic disease, and their parents (N=6) were recruited to attend a residential digital storytelling workshop and a one-to-one in depth interview. Self-completion questionnaires consisting of WEMWBS, self-reported health questions and socio-demographic information were evaluated pre, post, and 6 months post intervention.

Results

Mean wellbeing scores were below the population norm of 51.6 in both groups. We observed an increase from pre intervention (IQR 7.25 median 44.5), to post (IQR 7.2, median 47) and six months post intervention (IQR 12.25, median 50); adolescent wellbeing scores increased by an average of 2.5 per teen, but declined to pre-intervention scores at 6 months. The parents demonstrated sustained increase at 6 months. Two tailed P values (unpaired T test) were not statistically significant post intervention ($t = 0.74$, $P = 0.466$), and at 6 month ($t = 1.65$, $P = 0.113$). There was an increase in verbal communication scores pre (IQR 28.5, median 25), and post intervention (IQR 34.5, median 29).

Conclusions

Adolescent patients with multi-system allergic disease and their parents participating in a group residential workshop and one-to-one interviews have improved mental wellbeing scores post intervention, sustained at 6 months in the parents; albeit not statistically significant. Quantitative interview analysis, larger sample sizes and comparative studies with non-intervention groups are required. The WEMWBS may lend itself for mental wellbeing assessment in teenager's age 13 years and above.

P.054

The use of Cow's Milk related Symptoms Score (CoMiSS) as a predictor of cow's milk protein allergy

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Objectives

The Cow's Milk-related Symptom Score (CoMiSS), which considers general manifestations, dermatological, gastrointestinal and respiratory symptoms, was developed as an awareness tool for cow's milk-related symptoms. An arbitrary cut-off value of ≥12 was selected as the criterion to pick up infants at risk of Cows Milk Protein Allergy (CMPA). A score of 12 requires the presence of at least two severe symptoms. We wanted to see the usefulness of the scoring system in diagnosing infants with CMPA in a secondary care hospital.

Method

We applied CoMiSS scoring tool in infants with symptoms of suspected CMPA presenting to the Accident and Emergency department of a District General Hospital in West London. The infants were scored mainly by the Paediatric Registrars.

Results

Total number of infants scored were 30 with an age range of 24 to 136 days and 19 infants had base line scores of >12. The mean score of the positive cases was 17. The infants strongly suspected to have CMPA were started on hypoallergenic formulae, 17 on extensively Hydrolysed formula and two on Amino Acid Based formula. The decision of starting hypoallergenic formulae were agreed and approved by the Allergist or Dietitian.

Later CoMiSS re scoring was done (3 -4 weeks after the initial scoring) in all these infants. The score now was significantly low with a mean of 6

The challenge with cow's milk formula at 4 weeks after the initial scoring was possible in 10 cases and 8 were positive.

Conclusions

The CoMiSS is a simple and easy-to-use awareness tool for cow's milk-related symptoms. It increases awareness of the common symptoms of cow's milk protein allergy that in turn can aid an earlier diagnosis. CoMiSS can also be used to evaluate and quantify the evolution of symptoms during a therapeutic intervention.

P.055

Anaphylaxis in children: are we doing enough to prevent further anaphylaxis?

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Objectives

This audit was performed to review the management of children presenting with anaphylaxis according to the RCPCH Anaphylaxis Care pathway and NICE Guidelines, with the aim of updating the current Leeds Teaching Hospitals Trust Anaphylaxis Guideline. Good advice and education about preventing anaphylaxis is important because repeated anaphylactic reactions lead to increased hospital admissions, increased patient anxiety and death.

Method

Patients aged between 0 and 16 years who were admitted to Accident and Emergency with anaphylaxis between January 2014 and December 2015 were identified with the help from the coding department using the search criteria “Anaphylaxis”. Patient notes were reviewed and Windip was also used to review Accident and emergency notes.

Results

36 patients were identified but only 21 patients had anaphylaxis. Of the 15 patients excluded, 9 did not have anaphylaxis, 4 never had an admission with anaphylaxis, and 2 notes were missing. All 21 patients were admitted under the medical team and 85% were observed for at least 6 hours. However, 24% of patients were not referred to the Allergy Clinic. 14% of patients were not prescribed an auto adrenaline injector (AAI). Of the ones that were given an AAI, 57% were not given any information about anaphylaxis, 71% were not given advice about trigger avoidance and none were referred to patient support groups.

Conclusions

From this audit, we found that patient education about anaphylaxis treatment, trigger avoidance and patient support is poor despite these being very important in preventing further anaphylaxis. We recommend that a discharge proforma is produced which includes a patient information leaflet, appropriate provision of the AAI with technique education, and referral to the Allergy clinic for further follow up and education.

P.056

Audit to evaluate the current practice in the management of FPIES

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Objectives

This audit primarily aims to explore treatments for reactions associated with an FPIES (Food Protein Induced Enterocolitis Syndrome) challenge, and whether these treatment options are still relevant and in accordance with current guidelines.

Additionally, it also looks at whether the age of the child correlates to a positive or negative FPIES challenge.

Method

An audit was undertaken, using retrospective data from our FPIES challenge database. The audit looked at 40 children challenged over an 8 year period.

Results

The most common age for performing a challenge was 2 years. The average age showing a positive reaction was 4.25, and negative reaction 3.94. The most common foods challenged were cow's milk and cod.

Out of the 40 challenges, 8 patients had positive reactions, 29 negative reactions and 3 were deemed to be inconclusive.

On average, it was observed that following ingestion of the food, reactions occurred after 2 hours.

Treatment of reactions included use of intravenous Ondansetron, Hydrocortisone, intravenous fluids and oral antihistamine.

Conclusions

The study of the data showed there was no correlation between the age of the child at the time of challenge with a positive or negative reaction. It is accepted that many children outgrow FPIES by the age of 3 years, however the remaining typically outgrow this by the age of 5 years. Our audit therefore supports the suggestion that children can still have FPIES above 3 years of age. The current guidelines for an FPIES challenge is to cannulate patients prior to the challenge, aiding swift treatment with intravenous anti-emetics and intravenous fluids. A study by Soppo et al (2014) suggests intramuscular ondasentron being just as effective as intravenous ondasetron, in helping to reduce the severity of reactions. However, if current management protocols were to be changed, more data on this topic would be required.

P.057

Characteristics of patients undergoing food protein-induced enterocolitis syndrome (FPIES) oral food challenges (OFC)

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Objectives

There are several guidelines on the diagnosis and management of FPIES. It is unclear which guideline is suitable for our population in the United Kingdom. For those who have FPIES to milk, there is little guidance on the introduction of other high risk food allergens, leading to unnecessary exclusion. We aimed to investigate features, type of allergens and age of resolution in patients who attended FPIES challenges.

Method

All patients who attended FPIES challenges over a 4 year period (2013~2017) at a tertiary allergy and gastroenterology hospital were analysed by retrospective case note reviews.

Results

15 patients attended FPIES challenges. 4 (26.6%) had a history of only milk as a trigger with a mean age of onset at 13 weeks and all 4 of them excluded more than one allergen as a result. 1 had reaction to cod at 20 months of age. 3 (20%) had inconsistent history and passed the challenge. 6 (40%) had a history of symptoms from multiple food allergens or ingesting a mixture of allergens.

45 challenges were performed: of which 12 (26.7%) were diagnostic, 13 (28.9%) were to check for resolution while others were to test for FPIES to other high risk food. Only 2 of the diagnostic challenges confirmed FPIES.

Age of resolution is 37 month for milk, 39 months for soya, 42 months for egg, 10 months for oat, 38 months for rice and wheat, 28 months for fish.

Conclusions

Majority of oral food challenge to FPIES were for reassurance on high risk food groups and to exclude the diagnosis of FPIES. FPIES should be recognised and referred early to ensure no needless food elimination. There is still a need for multi-centre study on FPIES in the UK.

P.059

Optimal mode of delivery for using probiotics or prebiotics to prevent eczema: a systematic review and meta-analysis

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Objectives

To undertake a systematic review and meta-analysis to assess the relationship between diet during pregnancy, lactation and the first year of life and future risk of allergic or autoimmune disease, or allergic sensitisation.

Method

In this systematic review, searches were made to produce a library of trials from January 1946 to February 2017 from MEDLINE, EMBASE, Web of Science, CENTRAL and LILACS. This systematic review includes randomised controlled trials, systematic reviews and meta-analyses which explore the relationship between diet during pregnancy, lactation or an infant's first year of life and risk of allergic disease or sensitisation. Two authors independently selected eligible studies, extracted data and assessed the quality of evidence using the Cochrane Risk of Bias tool. The certainty of evidence was assessed using GRADE. A senior consultant also independently checked all findings to ensure rigor and accuracy during data extraction and analysis. Statistical analysis was later performed and results analysed comprehensively.

Results

Overall the quality of evidence was moderate - there was a low or unclear risk of bias in most studies. Probiotics reduced AD risk at age ≤4 years (RR: 0.78; [0.68, 0.90]) with high statistical heterogeneity (I^2 = 60%). Subgroup analyses showed some evidence that postnatal administration to mother during lactation is more effective than infant supplementation alone during the postnatal period (p=0.005) – high statistical heterogeneity remained in this subgroup analysis. Other subgroup analyses showed no clear evidence that one subgroup had different efficacy to another. This effect did not persist in 5-14 year olds.

Conclusions

These findings suggest that further trials are needed to investigate the use of probiotics during pregnancy for the prevention of allergic rhinitis, wheeze and food allergy.

P.060

Increasing prevalence of GP diagnosed childhood allergies in the United Kingdom: an analysis of The Health Information Network (THIN) database

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Objectives

To estimate the trends in prevalence of General Practitioner (GP) diagnosed allergies between 2000-2015 amongst UK children (0-17 yrs).

Method

Utilising the relevant Read codes, annual prevalence trends for GP diagnosed allergic rhinoconjunctivitis (ARC), nut allergy, egg allergy, all food allergy and complex allergies were estimated from THIN, a large primary care database covering records from 500 UK GP practices and representing 6% of UK population. 'Complex' allergies were defined as more than one allergy diagnosis per child. Analysis was done using Stata13.

Results

A total of 1.5 million UK children under the age of 17 were registered between 2000 and 2015, providing 9.3 million person years of follow-up data. We found that the prevalence of ARC amongst UK children increased by 160% [35.07 to 91.28 per 1,000 children] during the study period. The prevalence of food allergy increased by 120% [5.7 to 12.5 per 1,000 children] and that of egg and nut allergy increased by 81% and 275% respectively [1.5 to 2.7 for egg allergy and 1.2 to 4.5 for nut allergy per 1,000 children].

The proportion of children with eczema and ARC increased by 354% [10.02 to 45.5 per 1,000], while those with eczema, asthma and ARC increased from 4.1 to 15 per 1,000 [268% increase]. Similarly, the prevalence of a combination of eczema and food allergy registered a 177% increase to 8.2 per 1,000 children in 2015[from 3.1 in 2000] whereas that of children with eczema, asthma and food allergy increased 214% [1.0 to 3.1 per 1,000]. There was a 580% increase [0.2-1.3 per 1,000] in children with all four of eczema, asthma, ARC and food allergy.

Conclusions

The prevalence of GP diagnosed common paediatric allergies, including complex allergies has increased significantly in the UK between 2000-2015. This has obvious implications for the provision of paediatric allergy services in the country.

P.061

Investigation of beta-lactam allergy in children

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Objectives

Suspected beta-lactam allergy in children is common, with few confirmed on testing. We aimed to establish the rate of beta-lactam allergy in children referred to our service, to determine whether skin prick tests (SPTs) and specific IgEs add diagnostic value and the nature and timing of reactions.

Method

Subjects with suspected beta-lactam allergy were identified from the challenge database between March 2013 and April 2017. Medical records were reviewed. SPTs were performed to culprit drugs. Specific IgE was measured using ImmunoCAP. Drug provocation tests utilised three escalating doses in hospital followed by a five-day course at home.

Results

81 subjects were identified, mean age 6.7 years (1-15 years), 54% male. Presenting features were: rash (80%); angioedema (19%); gastrointestinal (9%) and respiratory (9%).
SPTs were performed in 27 (33%) and specific IgEs in 22 (27.1%). All negative. Subjects were challenged with phenoxymethylpenicillin (56%), amoxicillin (30%), flucloxacillin (4.9%), cephalexin (4.9%), cefadroxil (2.5%) and co-amoxiclav (2.5%).

Ten patients (12.3%) had positive oral challenges (six male). The mean age of children having positive challenges was 9.1 years and negative challenges 6.2 years (p=0.043).

Four had immediate reactions (phenoxymethylpenicillin 3, amoxicillin 1). Two patients developed urticaria and two respiratory symptoms (rhinitis in one; chest tightness and angioedema in the other), all managed with cetirizine. No immediate reactions occurred in children under 5 years.

Delayed rashes developed in six patients (amoxicillin 3, cephalosporins 2, phenoxymethylpenicillin 1), four on day 2, one on day 3, one timing unclear.

Conclusions

Immediate reactions occurred in 4.9% and delayed reactions in 7.4%. Positive challenges were more likely in boys. SPTs and specific IgE added no diagnostic value.

Immediate reactions occurred more commonly with phenoxymethylpenicillin. Children having immediate reactions tended to be older. Immediate reactions are uncommon, but support the need for observed oral beta-lactam challenges in children of five years and above.

P.062

Eosinophilic Oesophagitis: a rare cause of unexplained multiple food intolerance in children

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CASE PRESENTATION

Background

Eosinophilic oesophagitis is an allergic/ immune disease that manifests as swallowing difficulty, gastro-oesophageal reflux, vomiting, multiple food intolerance and reduced appetite. It is characterised by >15 eosinophils per high power field in the epithelial lining of the oesophagus.

Case Presentation

A boy presented in the first year of life with multiple food allergies and severe atopic dermatitis. He showed significant sensitisation to milk, egg, peanuts and fish for which he was prescribed Epinephrine auto-injector devices. A comprehensive work-up included skin prick tests, specific IgE-antibody testing and organ function tests. The severely restricted diet due to multiple unexplained food intolerances led to severe vitamin D deficiency. Co-morbid conditions included asthma, hypermobility, Autistic Spectrum Disorder and Tourette's syndrome. Recurrent abdominal pain resulted in frequent school absences, therefore a multi-professional conference was organised by the safeguarding team. In view of the lack of manifest symptoms to food intolerance and the absence of confirmation by laboratory tests, his problems were considered to be functional. Following assessment by a paediatric allergist, eosinophilic oesophagitis was considered and diagnosed on biopsy. Subsequently, solid phase multiple-allergen assay (ImmunoCap ISAC) confirmed significant sensitisation to cod, aeroallergens, nuts and kiwi fruit. There was significant cross-sensitisation to a broad spectrum of PR10 proteins explaining oral allergy to various stone fruits.

Discussion

The boy was put on a regimen of high dose protein pump inhibitors and H1-antihistamines for 3 months. Oral steroids and an elemental diet were planned but not required due to a significant reduction in symptoms. Gradually, the family were able to introduce a variety of foods into his diet with success.

Conclusions

Eosinophilic Oesophagitis should be considered as an underlying cause of symptoms of unexplained multiple food intolerances. Ideal management is based on collaborative input from a multi-disciplinary team including an allergist, gastroenterologist and an allergy dietitian.

P.064

An audit of the care of paediatric patients with anaphylaxis and allergic reactions

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Objectives

Allergic reactions are classified as either anaphylaxis or mild/moderate allergic reactions based on the presence or absence of life-threatening airway, breathing or circulation clinical features.

We audited the management of children with anaphylaxis against nationally established standards of care and evaluated the treatment being received by patients with mild/moderate allergic reactions.

Method

Case notes for patients aged under 16 years who attended Walsall Manor Hospital between 01/01/2015 and 31/05/2016 with a primary diagnosis of anaphylaxis or allergy were assessed. 73 patient episodes were audited; of these, 12 episodes were classed as anaphylaxis and 61 as mild/moderate allergic reactions.

Patient care was audited against NICE clinical guidelines and NICE quality standards for anaphylaxis.

Results

In the cohort presenting with anaphylaxis, triggers were identifiable in 75%. 83% were referred to the allergy clinic, 25% had documented evidence of an allergy plan and 33% discharged with an adrenaline auto injector.

In the cohort presenting with mild / moderate reactions, triggers were identifiable in 71%. 74% had antihistamines and 52% given steroids.

Conclusions

Clear guidelines exist for the management of anaphylaxis. Our audit showed poor documentation of advice given to patients, despite the existence of patient information leaflets. We have cascaded this information to the paediatric and emergency departments to increase their usage.

There is currently a lack of clinical guidance on the treatment of mild/moderate allergic reactions. This project revealed that the majority of paediatric patients presenting with mild/moderate allergic reactions are being prescribed steroids, despite limited evidence for their use within the literature and despite the side effects that come with even short courses of steroid. We have discussed this in our paediatric and emergency teams to ensure due consideration is given before steroids are prescribed.

P.065

Access to allergy care- is it the same for all ethnicities? Perceptions of staff

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Objectives

Access to care not only means referral to services but access within a clinical environment to the same level of care. Black minority ethnic (BME) populations have poorer outcomes for most health related conditions and understanding why is of paramount importance. We aimed to understand the perception of staff as whether, in our paediatric allergy service, we offer the same quality of care to children from a BME background compared with other populations and if we don't the barriers to this.

Method

Nine members of the paediatric allergy team were interviewed using a semi structured questionnaire. Interview transcripts were analysed using a grounded theory approach to generate themes and subthemes.

Results

The themes and subthemes generated from the interview responses included cultural competence, & compassion (families and relationships, food, environment & religion, communication (verbal and non-verbal) and engendered feelings (we are doing our best, racism, false sense of equity & empowerment). Main concerns were the ability to deliver effective avoidance advice and keeping patients safe between clinic reviews as well as ensuring an effective way of communicating within and outside of clinic.

Conclusions

Staff were unhappy with their ability to provide the same quality of care to families from the BME community compared with other populations. Communication was felt to be a major issue along with a lack of cultural competence resulting in families being unable to receive the same support and education materials that would keep their children well. There was a sense of disempowerment of staff members when they were unable to deliver what they perceived as 'excellent care' and they were unable to perform their job to the best of their abilities. A follow on study will examine the perceptions of the BME community and what we need to change to help them more.

P.066

Paediatric one stop allergy clinics pilot - did realities match the expectations of parents and staff?

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Objectives

To assess feedback from parents and staff after a Pilot Paediatric One-stop allergy clinic in a DGH.

Method

Parents' feedback was collected from a Picker "your Child's Allergy and Symptoms' questionnaire immediately after the clinic. Staff gave verbal feedback after the clinic.

Results

8 children aged 4 months to 8 years were seen in the allergy pilot clinic in May 2017. Our patient experience team helped parents fill in a questionnaire consisting of 37 questions. None of the children had a firm diagnosis of allergy before. 4/8 of children were reported to have symptoms since they were infants and 2/8 had symptoms for less than 1 year. 3 had previously seen a GP, 3 by a hospital doctor, 1 by dietician and 1 by UCC. All children had been seen multiple times (2-7 times) by health professionals and did not have a firm diagnosis yet. All parents felt that the professional they saw in clinic knew enough about their child's condition, were given chance to discuss treatment options and were looked after quite well. 5 felt that health professionals do not communicate with their child's nursery or school about their condition. 4 parents felt that they would like more follow-ups in future and more information on allergy support groups.

Clinical staff had attended courses to up skill in allergy and completed the specified competencies. Staff felt that providing initial consultation, investigations, diagnosis with management and a dietetic review in one setting was comprehensive and easier than expected.

Conclusions

All parents were pleased that their children had investigations, treatment plan and dietetic review in one clinic. Allergy clinic staff felt that they had provided better care compared to fragmented allergy care previously.

We aim to discuss with our local commissioners to establish a regular one-stop allergy clinic for children.

P.067

Legume sensitisation, allergic reaction and treatment in an East London population

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Objectives

Legumes are recommended by health organisations as staple food due to their low cost, high protein, lipid and vitamin content. The widespread use of legumes has resulted in an increased prevalence of allergy. There is also significant cross-reactivity between different legumes due to the presence of structurally homologous proteins. The aim of this study was to assess sensitisation and clinical reaction to various legumes.

Method

Data was retrospectively collected from electronic records for children diagnosed with legume allergy (lentils, beans, chickpea, and green pea). 32 patients were identified. Carers/patients completed a questionnaire. Skin prick testing was undertaken for 13 different legumes.

Results

Mean age of first reaction was 1.78 years (SD±1.7 years). Red lentil was reported as the most common allergenic legume (37.5%, 12/32) followed by chickpea (9.4%) and 9.4% reacted to both chickpea and red lentil. Half of patients with legume reactions reported involvement of respiratory system (50%, 16/32), however only one patient had been treated with adrenaline (3.1%). One in four tolerated chickpea, 15% haricot beans, 9.1% green pea and 6% red lentils. Children who tolerated chickpea had skin prick tests (SPT) between 0-7 mm. Patients who tolerated green pea and lentil had SPT 0-3 mm and all patients who tolerated haricot bean had 0 mm. 9.3% reacted to multiple pulses. 66% of patients who reacted to red lentil tolerated chickpea and beans, whereas 33% of patients with chickpea allergy tolerated red lentils.

Conclusions

Legume allergy presents in the first 3 years of life. Red lentils and chickpeas are the commonest allergens. 10% of these East London patients had reactions to multiple legumes. The majority of patients with red lentil allergy tolerated chickpea and beans, but only one third of patients with chickpea allergy tolerated red lentil. Management of anaphylaxis was suboptimal.

P.068

Legume allergy in children: the who, what, where and when

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Objectives

Lentil allergy is common in Asia, the Mediterranean and the Middle East but there is little reported in the literature about allergy to legumes (peas, beans, chick peas or lentils) in children from the UK. In our Children's Allergy Service, we see a significant number of children with these allergies but have little information to guide clinicians as to the cross reactivity, risk and outcome of these allergies. The aim of this project was to gain more insight into the children attending our service with a legume allergy.

Method

We collected data from children with legume allergy seen in our service from Jan 2016 until May 2017. Patient details were collected from a search of EPR (electronic patient records) and from referral from clinicians. Parents were then contacted by telephone to complete a questionnaire (n=51). Fifty patients/carers agreed to take part and data for these was collected.

Results

Who: We collected data from 50 patients. Median age 6 years, 2 months (range 1 year, 0 months to 17 years 10 months). 30 children were male (60%). Most children (N=42, 84%) had eczema, and nearly half had asthma (n=23, 46%) or allergic rhinitis (n=24, 48%).

What: Allergy to lentil was most common (80%), followed by pea (78%), chickpea (72%) and then bean (46%).

Where: 42 % (n=21) of patients were from Asian/British Asian backgrounds. Most commonly Indian (16%) and Pakistani (8%). One third (32%) of the children's ethnic background was described as 'white British', 10% were white European or other. Only 4% of children were black/black British and 10% were from mixed background.

When: Allergy to legume occurred at <12 months in nearly half of patients (44%, n=22). In ¼ of patients, their allergy was diagnosed between 12-24months and 20% between 2-5 years.

Conclusions

This is a first reported data on children with legume allergy in the UK that we have found. Our data showed legume allergy occurring early in life and coexisting with other food allergies. Most children had either an Asian, British or European background.

P.069

Allergic reactions to legumes in children

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Objectives

A legume is a plant with its seeds in a pod, including peas, beans, lentils, and some types of nuts. While there is a lot of information available about peanut allergies in the UK, very little can be found for peas, beans, lentils, and chickpeas. The aim of this project was to understand the types of allergic reactions, especially anaphylaxis, that legume-allergic children attending our Allergy Service are experiencing.

Method

Data was collected from children (<18 years, median age 6.17 years) with a legume allergy seen at the service between January 2016 and May 2017. Children with allergies to peas, beans, lentils, or chickpeas were included. Patient details were obtained using EPR (electronic patient records) and from clinical referrals. Their parents/carers were then contacted by telephone to complete a questionnaire. Of 51 parents contacted, 50 consented to take part in this study.

Results

Of the 50 children, most have experienced an allergic reaction to a legume (n=42, 84%). The remaining children were diagnosed at clinic using skin prick tests and/or specific IgE blood tests. Of the children who have experienced a reaction, 98% (n=41) had reactions involving skin changes (rashes, hives, itching and/or angioedema). 43% (n=18) experienced gastrointestinal symptoms (vomiting, abdominal pain, and diarrhoea). 31% (n=13) developed respiratory symptoms (wheezing, coughing, difficulty breathing and/or swallowing). No children reported collapse or cardiovascular symptoms. Using the EAACI clinical criteria for anaphylaxis, 55% (n=23) had an anaphylactic reaction to legumes. Of all children, 90% (n=45) have been prescribed an adrenaline auto-injector.

Conclusions

This is the first reported data on clinical manifestations of legume allergies in the UK. It was found that reactions to legumes usually involve skin changes and often coexist with symptoms affecting other systems. Anaphylaxis to a legume was reported in over half of children who had experienced an allergic reaction.

P.070

Are anaphylaxis paediatric patients being referred to specialist allergy services?

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Objectives

Anaphylaxis is a life-threatening allergic reaction that can cause death and patients who present with suspected anaphylaxis should be referred to specialist allergy services to reduce the risk of a recurrence. An audit was carried out to determine the proportion of paediatric patients (under 16 years old) who were referred after presenting to the emergency department (ED) in University Hospital Wales (UHW) between 2014-2016.

Method

Patient data was compiled using keywords that covered the various presentations of anaphylaxis e.g. allergy, allergic, anaphylaxis, anaphylactic, rash, angioedema, urticaria, collapse, difficulty breathing, wheezing, stridor, bite, sting and insect. A total of 3, 444 cases were compiled and each patient's attendance was analysed using ED records and letters to determine if the patient had anaphylaxis. Patients who fit the criteria for anaphylaxis were checked if they were referred to a specialist allergy service.

Results

58 patients had anaphylaxis during this period and 38 of them were referred. This gave rise to a referral rate of 66%. 18 of these patients were referred by their GPs.

Conclusions

While a majority of patients were being referred, this percentage can be further improved. This can be achieved by informing doctors and nurses on the latest guidelines for anaphylaxis patients and improving the awareness of the various presentation of anaphylaxis as it is an under diagnosed health issue.

P.071

Refractory anaphylaxis at food challenge treated with peripheral adrenaline infusion

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CASE PRESENTATION

Background

Intramuscular (IM) adrenaline is established as the first-line treatment for anaphylaxis. Up to 20% of anaphylactic reactions do not respond well to a single dose of IM adrenaline. We present a case of a biphasic reaction which was refractory to multiple IM injections of adrenaline at in-hospital food challenge, but responded to a regime of peripheral intravenous adrenaline.

Case Presentation

An 11-year old girl with a skin prick test of 5mm to commercial peanut extract underwent double-blind placebo-controlled oral food challenge to roasted peanut, conducted according to PRACTALL criteria.

The challenge was halted following a cumulative dose of 143mg peanut protein, due to mild lip oedema, throat pain, abdominal pain, rhinitis and tiredness. The patient was treated with antihistamine, and shortly thereafter, slept for 30min. On waking up 2½ hours after her last dose, she reported feeling much better, but within 10 minutes she developed generalised urticaria, severe biphonic wheeze which worsened despite repeated IM adrenaline (0.3mg, 0.4mg, 0.4mg) and back-to-back nebulised adrenaline and salbutamol. She was commenced on a peripheral intravenous adrenaline infusion (0.01mg/kg/hr), with symptom resolution within 30mins.

Discussion

IM adrenaline is the first-line treatment of anaphylaxis, but severe refractory reactions can occur. We used a protocol for a peripheral intravenous adrenaline infusion which, to our knowledge, has not been used in UK children before. Sustained, higher plasma concentrations of adrenaline are likely to be required in refractory anaphylaxis; this may be difficult to achieve via intramuscular bolus injections.

Conclusions

This case highlights the unpredictable nature of refractory anaphylaxis, and the utility of an emergency peripheral adrenaline infusion protocol in such circumstances. Our case underlines the need for specialist units undertaking higher-risk food challenges to have staff trained to deal with refractory anaphylaxis, and we propose this intravenous adrenaline protocol may be appropriate in children as well as adults in this setting.

P.072

Multi-site audit of management of chronic urticaria and angioedema (CUA) in children

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Objectives

1. Audit management of chronic urticaria and angioedema in children
2. Identify variations in practice amongst centres

Method

4 year multisite prospective audit conducted across 11 district hospitals and three specialty teams from a tertiary hospital. Children (0-16 years) with daily or almost daily symptoms of urticaria with or without angioedema for at least 6 weeks were included. Acute urticaria and hereditary angioedema were excluded. An algorithm of management was shared with all sites. SNAP software v.10-11 was used to develop a questionnaire and collect data. Cases were recruited for 3 years from September 2012 to August 2015, follow-up continued until September 2016.

Results

171 cases were reported, 77 boys and 94 girls. Children were seen in specialist allergy, dermatology, rheumatology and general paediatric clinics. Initial diagnosis was CU without angioedema in 81, CU with angioedema in 57, chronic angioedema without urticaria in 8 and intermittent urticaria in 25. Significant variation in reporting of cases was observed between centres. In 3 years the top 5 centres reported an average 10 cases per year, 4 centres reported 4 per year and 5 centres reported no cases. 103 cases had various investigations whilst 68 had no investigations. In one centre practice varied as only 6 cases had no investigations compared to 54 cases who were investigated ($P<0.0001$). Most centres use urticaria activity score in assessment and management. 83% were advised or commenced on treatment on first visit. All treated children received a combination of non-sedating antihistamines in standard or double doses. Tranexemic acid and omalizumab were not used at all. Out of 213 follow ups 70% were clinic visits while 30% were advised over the phone. 87 were discharged during follow-up. Children with chronic urticaria without angioedema were most likely to remit (82% of those discharged) while no children with chronic angioedema alone were discharged or remitted ($P<0.0001$).

Conclusions

Chronic urticaria occurs infrequently in children. Management guidelines have streamlined treatment and non-sedating antihistamines were mainstay of management. Experience of treatment varies across centres and variations in referral patterns and investigations exist. Tranexemic acid and omalizumab were not used in practice.

P.073

An audit of investigations in children presenting with chronic urticaria in a tertiary paediatric allergy department

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Objectives

Chronic urticaria is a relatively common condition associated with weals and/or angioedema occurring daily or almost daily for a period of at least 6 weeks. In the minority of children, this may be associated with a specific underlying condition however at present there is no consensus regarding the use of investigations. Indeed, the most recent BSACI guidelines (Powell et al., 2015) suggest that the diagnosis is made on clinical history and examination with further testing being only rarely required. Our objective was to determine whether we could rationalise testing in these individuals and thus limit unnecessary investigations.

Method

We performed a retrospective audit of children (10 months to 16 years of age) presenting to our paediatric allergy department with the diagnosis of chronic urticaria with respect to the investigations undertaken. The hospital records of children with the diagnosis of chronic urticaria (n = 58; 57% female) presenting from 2001 – 2017 were reviewed.

Results

Of 58 children who had been labelled as having chronic urticaria, only 24 were documented as having urticarial lesions on a daily or almost daily basis for a period of greater than 6 weeks. Most of these children were atopic (n = 14; 58%) and 14 children underwent either skin prick testing or specific IgE testing to foods or aeroallergens with 7 being showing evidence of perennial (house dust mite or pet) sensitization. One child had dermatographism and one was allergic to polyethylene glycol. Seventeen children (71%) underwent blood testing with 2 showing evidence of autoimmune disease (ANA positive, n = 1; raised anti-thyroid antibodies, n = 1). The vast majority of the blood tests undertaken were within normal limits with each child having an average of 4 blood investigations requested.

Conclusions

In a tertiary paediatric allergy department, physical urticaria is relatively rarely described and investigations should be rationalised according to clinical history.

P.074

A retrospective analysis of patients who received treatment with Sublingual Immunotherapy for seasonal allergic rhinitis since 2010

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Objectives

The incidence of seasonal allergic rhinitis (AR) is increasing in the UK and it is known to decrease quality of life in children. Sublingual immunotherapy (SLIT) is a safe and simple treatment for those who have inadequate response to maximum pharmacotherapy. However, there have been concerns of an association with Eosinophilic oesophagitis (EoE). The aim of this project was to assess the impact treatment with SLIT had on AR symptoms and to ascertain incidence of new symptoms, particularly those of EoE.

Method

Patients who had completed treatment with tree and/or grass pollen SLIT from 2010 to 2016 were sent a survey to complete. This asked about patient perception of AR severity since completion of treatment, rescue medication for AR the patient was currently taking and used a standardised symptom questionnaire to assess symptoms of EoE.

Results

77 patients were contacted, there was a 62% response rate. 45% received treatment with both grass and tree SLIT, 32% with grass alone and 12% with tree alone. 2% felt their symptoms had resolved completely, 88.5% responded that their AR was either ‘better’ or ‘much better’ and 8% felt there was no difference in symptoms after treatment with SLIT. 88% still required treatment with antihistamines but only 13% were using a nasal spray. 7% reported needing no treatment. 1 respondent (2%) reported recurrent heartburn, no one else reported any symptoms of EoE.

Conclusions

The results from this cohort of patients show that the vast majority of patients report a significant improvement in AR symptoms following treatment with SLIT. We did not find any association with symptoms of EoE in this cohort. SLIT therefore remains a safe and efficacious treatment for AR and should be encouraged as an add-on treatment in children who have had a suboptimal effect from maximal conventional pharmacotherapy.

P.076

Determinants of abnormal growth in children with IgE and non-IgE mediated cow's milk protein allergy

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Objectives

Children with cow's milk protein (CMP) allergy have been shown to be smaller and shorter than their peers. The primary objective of this cohort study was to determine whether an initial diagnosis of IgE compared to non-IgE mediated CMP allergy led to differences in growth outcomes. The secondary objective was to determine what other factors may be contributing to faltering growth in such children.

Method

The health records of 77 children in a single allergy service were retrospectively reviewed for immunopathological diagnosis and four growth outcomes (weight and height z-scores at diagnosis, and change in weight and height z-scores between after a mean follow-up of 17 months), in addition to other immunopathological, nutritional and iatrogenic factors determined *a priori* for secondary analyses.

Results

Children with IgE and non-IgE CMP allergy had a mean initial weight z-score of -0.34 and -0.34(p=0.99), respectively; mean initial height z-score of +0.29 and +0.28 (p=0.97; mean change in weight z-score of +0.23 and +0.30 (p=0.71); and mean change in height z-score of -0.25 and -0.39(p=0.6).

In the secondary analyses, children excluding dietary soya had a change in weight and height z-score of +0.02 and -0.81, compared to +0.38(p=0.02) and -0.047(p=0.002), respectively, in those including soya. Children with dietician input had a change in weight z-score of +0.42 compared to +0.10(p=0.03) in those with no dietician input. Lastly, children with recurrent wheeze or asthma had a change in weight z-score of +0.00 compared to +0.40(p=0.01) in those with no wheeze.

Conclusions

Most children in this CMP allergy cohort grew normally relative to their peers, with no significant differences between IgE and non-IgE mediated disease. However, those excluding soya, those with recurrent wheeze or asthma, and those without the input of a dietician were significantly more at risk of faltering weight, and in the case of soya exclusion, height.

P.077

Efficacy and adverse events in children with peanut allergy treated with oral immunotherapy

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Objectives

To assess efficacy and adverse events observed in peanut allergic children undergoing peanut oral immunotherapy in the UK's only peanut immunotherapy service.

Method

Adverse events (AEs) were collected in 100 children attending the Cambridge Peanut Allergy Clinic for peanut oral immunotherapy (PNOIT). Treatment involved seven up-dosing visits; 2 to 200mg characterised peanut protein (stages 1-7), over a minimum of 14 weeks. Up-dosing occurred in hospital with 2h observation. Daily treatment continued at home. AEs, severity and treatment required were recorded daily by families on diary cards and reviewed at up-dosing visits.

Results

81/100 reached maintenance dose, 88 stage 6 or 7. A total 10,569 immunotherapy doses were consumed. 83.5% days were symptom free. The mean number of days per patient with symptoms was 17 (mean 106 days treatment); 76% of AEs were minor and transient (44% nausea/mild abdominal discomfort; 32% oral/throat pruritus). Less than 10% AEs required oral antihistamine. Moderate reactions involved more significant gastrointestinal upset; vomiting or diarrhoea (3.4% of AEs). 4.5% of AEs involved respiratory symptoms, most of which were mild, but this group included severe reactions. Inhaled salbutamol was used in 1/3rd of these. No patients had hypotension/collapse. IM adrenaline was used after 2/10,569 PNOIT doses (0.0002% of doses). There were significant co-factors present: poor asthma treatment compliance, respiratory infection, late nights and smoking (withdrawn from PNOIT) and a second patient with autism and exercise induced wheeze and urticaria, not carrying his inhaler (continued PNOIT). No patients required IM adrenaline during up-dosing visits. 4/100 patients attended ED. There were 2 drops outs, one for personal reasons.

Conclusions

Analysis of this large database shows that PNOIT is well tolerated; most days being AE free. Only 1 patient was withdrawn for medical reasons. Commonly reported side effects were mild and transient (throat/oral pruritus, nausea, abdominal discomfort), most not requiring treatment; severe side effects were uncommon and always respiratory.

P.078

Predicting challenge outcome in peanut allergy

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Objectives

We analysed data from a study of peanut-allergic children aged over 8 years, to determine if there are any variables which can predict the occurrence of anaphylaxis at in-hospital food challenge.

Method

Baseline patient characteristics, previous reaction history, skin prick test, specific IgE, peanut component data, and baseline mast cell tryptase and basophil activation test were used to assess for diagnostic utility in predicting anaphylaxis in 63 children with positive double-blind placebo-controlled food challenge (DBPCFC) to peanut in the BOPI study (Clinicaltrials.gov NCT02149719). The study was approved by the NHS HRA (15/LO/0287) and informed consent was obtained from all study participants.

Results

Sixty-three children with positive DBPCFC were included in the analysis: Median age 12.6yrs (8-16yr), 54% males. The median age of initial diagnosis was 2yrs. 40% had experienced a prior anaphylactic reaction in the past to peanut. At DBPCFC, 24% experienced anaphylaxis, with 2/15 reactions requiring more than one dose of parenteral adrenaline. 43% of children reacted to ≤43mg peanut protein (approx. 1/5 peanut); 14% required 1.4-4.4g peanut protein (approx. 7-26 peanuts) to meet stopping criteria according to the PRACTALL consensus. Two thirds of participants experienced recurrence of symptoms due to eating a snack at least one hour after challenge, despite initial improvement in symptoms. There were no significant predictors of anaphylaxis identified, by ROC curve analysis. 75% of participants had gastrointestinal symptoms, and over half experienced subjective/behaviour responses. One third of participants had not fully recovered by the following day.

Conclusions

In this cohort of peanut-allergic children, we could find no predictors of anaphylaxis or threshold at in-hospital challenge. Children should eat at least a light meal prior to discharge, to exclude possible symptom recurrence. A significant proportion of participants continued to have possible reaction-related symptoms up to 24hr after challenge.

P.079

A review of the venom immunotherapy service at Southampton Children's Hospital

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Objectives

Venom immunotherapy (VIT) has been provided at Southampton Children's Hospital (UHS) for several decades, during which time guidance on the use of VIT has changed. To explore how our service has evolved, and to assess if we are compliant with current BSACI guidance, an audit and service evaluation of our VIT service was performed.

Method

Details of paediatric patients who received VIT at UHS were obtained from an internal database. Patient notes were reviewed and compared against best practice according to BSACI guidelines. Further information was collated, including details of treatment duration and any side effects experienced.

Results

10 children received VIT at UHS since 2005 (5 bee; 5 wasp). 60% were referred from other hospitals. Two patients had started VIT abroad, and continued their treatment at UHS. All patients met the current BSACI criteria for VIT. All patients had specific IgEs to bee and wasp performed, but only 50% had skin prick tests carried out. The duration of treatment has reduced since 2005 (the 2005 patient received 9 years treatment; all patients starting after 2011 received 3 years). Documentation of medical assessments at each dose was variable. Every patient experienced large local reactions to VIT, which settled by year 3 of treatment in all cases. Two patients experienced systemic reactions requiring adrenaline during induction. Both were able to continue with the treatment.

Conclusions

The impact of the BSACI venom allergy guidelines on treatment duration is evident. Patient selection is compliant with the BSACI guidelines, although investigations and documentation of clinical assessments were not in all cases. The use of a treatment proforma has consequently been introduced. Venom allergy is rare in paediatrics and the need for VIT is rarer, highlighting the importance of centralised care or these patients. The development of a national database of this patient cohort may also be beneficial.

P.080

A rare case of IgE mediated sweet potato allergy

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CASE PRESENTATION

Background

Sweet potato is a perennial herb which is a member of the Morning glory family. It is eaten across the world and is the thirteenth biggest food crop grown globally. Whilst sweet potato is often implicated as a cause of food protein-induced enterocolitis, it rarely causes IgE mediated allergic reactions.

Case Presentation

A 3 year old girl presented to a Paediatric outpatient clinic for review of her multiple food allergies. She had previously been diagnosed with IgE mediated allergies to egg, peas, salmon and prawns and currently avoids these foods in her diet. At review her mother mentioned she had developed immediate significant florid urticaria when sweet potato was contact with her lips, but not eaten. A prick-to-prick skin prick test showed a 10x7mm wheal to sweet potato, with a 5mm positive control. Specific IgE to sweet potato has been sent, and is currently pending. The family have been advised to avoid all sweet potato in her diet.

Discussion

IgE mediated reactions to sweet potato are rare, although positive skin prick tests to sweet potato were seen in a study exploring potential food triggers in irritable bowel syndrome (Jun et al, 2006). None of these patients had symptoms on exposure to sweet potato suggesting they were sensitised and not allergic to this food. In this case, the history of immediate urticaria on skin contact with the food, combined with a positive skin prick test result suggests this patient has an IgE mediated allergy to sweet potato. Given the child's age a confirmatory oral food challenge will not be performed at present.

Conclusions

This case describes a relatively rare IgE mediated allergy to globally consumed food.

P.081

Allergen specific serum IgE tests (ImmunoCap): who, what and why? A review of testing in children at Ipswich Hospital, East of England

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Objectives

The aims of this review were to quantify the number of allergen specific serum IgE tests being performed over a three month period in a secondary care setting; who is requesting the tests and what the indications were. Also, are there any areas where we can reduce the number of tests being carried out, particularly for milk and aeroallergens?

Method

Three months of data were examined including all ImmunoCap tests and their class values. Interpretation was done using Microsoft excel.

Results

Over 3 months there were 669 tests for serum specific IgE, with a range of 1-21 performed per patient. Most of the assays were performed for gastrointestinal or skin complaints. Food specific ImmunoCap tests were strongly positive in 29/140 (20.7%), many of whom presented with serious systemic symptoms; 19 were provided with auto-adrenaline injectors, 7 opted to avoid the allergen and there was no clear documentation for 3.
The most frequent test was for milk IgE (n=83). 44 tests were performed on children under 3 years old and only 14% of those tested positive. Of the 37 milk IgE samples that were negative, 40.5% of these would be deemed inappropriate testing based on NICE guidelines for investigating cow's milk protein allergy.
There were 173 serum specific IgE tests for various aeroallergens; 61% were negative with only 9% Class 5-6 severe reaction. 14 children had no specific symptoms recorded relating to the aero-allergens tested.

Conclusions

Over 3 months, 669 serum specific ImmunoCap tests were performed, costing £9700. More needs to be done to avoid inappropriate testing, and involvement of an allergy nurse specialist with ability to perform skin prick tests could provide a cost-effective alternative. In those with non-IgE food allergy, especially milk, we should focus on developing robust care pathways with dietician involvement, for elimination diets and re-challenging.

P.082

Homozygosity for the FCER2 rs28364072 variant is associated with an increased use of leukotriene receptor antagonists and allergic rhinitis prescribing

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Objectives

Asthma is a chronic respiratory disease characterised by hypersensitive airways. FCER2 plays a role in the regulation of IgE responses and has been linked to atopy, asthma-related hospitalisations and uncontrolled asthma in children treated with inhaled corticosteroids. However, the role of this variant on prescribing is unclear. The aim of this study was to investigate the role of the rs28364072 variant on asthma-related prescribing and allergic rhinitis prescribing.

Method

A secondary analysis of BREATHE, a cohort study of gene-environment associations with asthma severity, was undertaken. BREATHE data were collected on participants with asthma, aged 3-22 years, between 2003 and 2005, in Tayside and Fife, Scotland. Through collaboration with the Health Informatics Centre in Dundee, BREATHE was linked to several databases including Accident & Emergency, community prescribing and Scottish Morbidity Records (hospital admissions). This linkage allows exploration of associations between genetic variation and prescribing. The data were analysed, over 9 years, using generalised linear models with random effects for the repeated measures on participants.

Results

Data on 927 individuals was analysed. A significant association was found between the homozygous variant in the FCER2 gene and prescribing of anti-leukotriene antagonists (AA vs. GG - Incidence Rate Ratio (IRR): 4.12, 95% Confidence Interval (CI): 1.48-11.45; AG vs. GG - IRR: 5.81, 95% CI: 2.00-16.85). A significant association was also found between homozygous individuals and allergic rhinitis prescriptions (AA vs. GG - IRR: 2.05, CI: 1.06-3.97). No association was found with inhaled corticosteroids or long-acting β2-agonists prescribing, separate or combined. Over the 9-year period, homozygous individuals cost more £288 to the NHS on asthma-related prescriptions than wild-type and heterozygous individuals.

Conclusions

Individuals homozygous for the rs28364072 variant have a greater risk of long-term prescribing of anti-leukotriene antagonists, which may result from poorer asthma control when these individuals are treated with inhaled corticosteroids.

P.083

Pictorial allergen representation is an innovative technique for skin prick testing in Paediatrics

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Objectives

In the allergy clinics at Nottingham Children's Hospital, skin prick testing leaflets are provided to families on request, but a busy clinic environment does not allow adequate time to engage with children. In our experience, skin prick testing in young children may be facilitated by using a pictorial representation of allergens, with active involvement of the allergy nurse in play therapy. This allows children to participate in the procedure and is an adjunct to using toys, nursery rhymes and 'bravery stickers'.

The aim of this survey was to collect feedback from families regarding pictoral representation of allergens during skin prick testing.

Method

A prospective survey was done in the allergy clinics at Nottingham Children's Hospital for 1 month from 1st May 2017 to 31st May 2017. A random sample of 15 patients included children in the age group of 6 months to 6 completed years. An anonymised form was given to parents by the doctor in clinic for written feedback. We collected 10 written responses. In addition, the allergy nurse obtained informal verbal feedback from children and their parents.

Results

All the children and parents gave positive and encouraging feedback.

Some of the comments were: "Our son felt at ease during the test and we are thankful to the allergy nurse"; "Fantastic method of doing the test. Wish this was done on previous occasions"….Since conducting this survey, we are regularly using pictoral representation of allergens for skin prick testing in our allergy clinics.

Conclusions

Pictorial representation of allergens significantly improves the success rate of skin prick testing and reduces distress in children. This impacts positively on patient experience and satisfaction in the allergy clinics.

P.084

Loss of tolerance to peanut following early dietary inclusion in high risk children

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Objectives

Results from the Learning Early About Peanut trial (LEAP) demonstrated that early introduction of peanut significantly decreased the risk of peanut allergy in high-risk infants. We report a case series of children aged 0-3 years with eczema and/or egg sensitisation in whom tolerance to peanut was not maintained, despite early introduction and regular inclusion of peanut in their diets following a successful in-hospital challenge test to peanut.

Method

38 children (29 male, 9 female) aged 0-3 years, were challenged in hospital to peanut with incremental doses (top dose 3g peanut protein). Skin prick testing to peanut was positive in 20/38 children prior to challenge testing and negative in 18/38. Patients who successfully completed the challenge test, were subsequently advised to include 2 teaspoons of peanut butter 3 x weekly into their diets at home.

Results

26/38 children passed the in-hospital challenge test to peanut (SPT 0- 6mm). 13/39 failed challenge testing to peanut (SPT 0-8mm). 1/13 reacted with anaphylaxis requiring adrenaline (SPT 2mm). 73% of children (19/26) successfully maintained tolerance to peanut for the mean period of observation of 17 months. 26% of children (7/26) who passed their initial in-hospital challenge with regular inclusion of peanut in their diets, failed to maintain tolerance, developing urticaria (6/7), or eczema flare (2/7) post peanut ingestion within 2-8 weeks of passing their challenge test. The mean age of children at the time of challenge testing was 15.8 months in those that remained tolerant to peanut versus 9 months in those where tolerance was not maintained.

Conclusions

Tolerance to peanut may be lost in the first 8 weeks post dietary inclusion, despite regular ingestion of peanut in high risk infants. Deferring challenge testing to peanut until after 12 months did not appear to be associated with a worse outcome.

P.085

The impact of house dust mite sub-lingual immunotherapy on children's quality of life after 2 years of treatment

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Objectives

The Cochrane Review for Sublingual Immunotherapy (SLIT) for allergic rhinitis (AR) 2011 demonstrated efficacy of house dust mite (HDM) SLIT in reducing AR symptoms. However, no paediatric studies looking at the impact of HDM SLIT on quality of life scores were included. We have demonstrated that HDM SLIT results in a significant improvement of health-related quality of life (HRQOL) as measured by Paediatric Allergic Disease Quality of Life Questionnaire (PADQLQ) in children after one year of HDM immunotherapy. This study aimed to determine whether a second year of HDM SLIT results in further improvement.

Method

Twenty children with moderate-severe HDM allergy (according to ARIA classification of allergic rhinitis), 6 to 16 years old, initiated SLIT treatment (with Staloral) at St Thomas' Paediatric Allergy Department and were followed up after one and two years of treatment. Shortage of Staloral resulted in patients changing to Oralvac during their first or second year. Statistical analysis (two-tailed Wilcoxon signed-rank) was conducted to determine whether there is a significant change in the overall PADQLQ score and individual symptom scores after the 2nd year of SLIT compared to a baseline PADQLQ score.

Results

Eighteen patients completed two years of SLIT treatment. There is a significant reduction in the total PADQLQ score at the end of 2 years of SLIT when compared to baseline score. The reduction in total score between year 1 and year 2 was not significant (p=0.73). For individual domains, after 2 years, the most significant reductions in score are for symptoms of coughing, wheezing and chest tightness, on patients' ability to remember things learnt at school and the impact of their symptoms on day to day activities.

Conclusions

This study suggests that 1 year of HDM SLIT improves quality of life in children suffering from severe HDM allergy and this improvement is maintained after 2 years of treatment.

P.086

Are we missing anaphylaxis in children presenting with acute severe wheeze?

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Objectives

Anaphylaxis is rare but occurs as a severe manifestation of hypersensitivity reaction involving multiple organ systems. Anaphylaxis presents with variable signs and symptoms, predominantly respiratory features in children. This raises concerns on misdiagnosis of anaphylaxis as acute asthma in children with acute severe wheeze.

Method

All children, aged 1 to 16 years, who presented with acute wheeze and required intravenous (IV) bronchodilator treatment, were identified across twenty-four Paediatric Emergency Research in the UK and Ireland (PERUKI) network centres for the FESTIVA (Feasibility for Intravenous Treatment in Asthma) service evaluation study between March and May 2013. Clinical case reports from the FESTIVA study were analysed retrospectively, for evidence of anaphylaxis, based on the diagnostic criteria established in the Brighton Collaboration Case Definition (BCCD) of anaphylaxis.

Results

109/110 children had complete clinical information for evaluation based on the BCCD of anaphylaxis. 1/109 (0.9%; 95% CI 0.02%–5%) case fulfilled three minor diagnostic criteria in the BCCD of anaphylaxis, which is mildly suggestive of anaphylaxis. 8/109 cases fulfilled two minor diagnostic criteria, involving the cardio-respiratory system and one other organ system, which are insufficient to meet the BCCD of anaphylaxis.

Conclusions

This study is concordant with prior literature that, although rare, childhood anaphylaxis may be overlooked in cases of acute severe wheeze. This study warrants a more robust, clinical prospective multi-centre study, using the BCCD of anaphylaxis diagnostic tool, to accurately assess the impact of the potential misdiagnosis on the management of acute severe wheeze in children.

P.087

Anaphylaxis to parsley and chives: primary sensitization or cross-reactivity with pollens

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CASE PRESENTATION

Background

Plant protein allergens such as profilin, LTP and PR-10 have been known to cause plant-food pollen syndrome described in recent literature, particularly in reported allergies to celery and onion which belong to the same plant family as parsley and chives, respectively.

Case Presentation

A 15-year-old girl with asthma and hay fever reported anaphylaxis after exposure to fresh parsley, chives and peanuts on separate occasions. She had a mild reaction with periorbital swelling after eating cooked parsley. She now tolerates dried parsley, but avoiding fresh parsley, and all herbs apart from basil. She carries a JEXT auto injector pen.

She then had further anaphylactic reactions following ingestion of cheese-and-chives-flavoured crisps for the first time, requiring administration of Jext auto injector pen, and on another occasion to a peanut and white chocolate cookie. The only vegetables and fruits she has eaten are carrots, basil, parsnips, peas, carrots, apples, tangerine, nectarine, melon and pineapples without any reactions.

She reports sneezing on regular exposure to the birch tree in their garden. Her asthma has worsened over the past year, but was well-controlled during the time of her reactions. She also has vitiligo.

SPT was positive to parsley, chive, dill, rosemary, thyme, and celery. Her total IgE was 58. Specific IgE 0kua/L to: silver birch pollen, mixed tree and grass pollen, weed pollen, peach, pear celery, rPrup3, rPruP1 and rBet v1/PR-10 and <0.35 to mixed nuts including peanut, house dust mite, and food mix (egg, cow's milk, wheat and soya). Baseline tryptase was <1.

Discussion

Plant food-pollen syndrome was suspected, particularly PR-10 or LTP allergy, in view of clinical history, however she was not sensitized to either rPruP3 or rBet v1/PR-10.

Conclusions

This patient likely has primary sensitization to parsley and chives, but may have cross-sensitization from another plant allergen protein, but not PR-10 or LTP.

P.088

Audit of anaphylaxis during food challenges at a paediatric day unit

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Objectives

To identify risk factors and associations leading to anaphylaxis during food challenges.

Method

Data from the food-challenges-database of a tertiary paediatric allergy clinic was collected (January 2013 – October 2015). The electronic-patient-records of the anaphylactic cases were reviewed.

Results

There were 24 anaphylactic cases in 546 food challenges (4.4%).

70.8% (17/24) was in males and 29.2% (7/24) in females. This was 3.8% of total number of male (17/446) and 7.0% female challenges (7/100).

Highest rates of anaphylaxis occurred in Sesame Seed (4/16) and Wheat (1/4) challenges, 25.0% of total number of challenges per food type. Next was Almond at 20.0% (2/10), Baked Milk at 12.9% (4/31), Soya at 12.5% (1/8), Ibuprofen at 10.0% (1/10), Peanut at 8.0% (7/88), Cow's Milk 5.0% (2/40) and Baked Egg at 3.3% (2/61).

The product used for Sesame Seed challenges was changed from Sesame Snaps® to tahini during the audit.

Anaphylaxis occurred in 12.9% (4/31) of Baked Milk challenges compared to 5.0% (2/61) in uncooked Milk.

83.3% (20/24) of anaphylaxis occurred in Early- and Mid-stages (low-medium dose), with 16.7% (4/24) in End-stages.

45.8% (11/24) occurred in 6-10-year-old age group, the highest compared to 0-5 and 11-15 age groups.

Asthma was noted in 45.8% (11/24) of anaphylaxis.

Two or more other food allergies were present in 45.8% (11/24).

Two EpiPen doses were used in 3/24 (12.5%) cases of anaphylaxis, 0.54% (3/546) of total challenges.

Conclusions

Anaphylactic risk of food challenges is low. Higher clinical index of suspicion of anaphylaxis is needed in females, Sesame Seed and Wheat challenges, Baked Milk compared to uncooked Milk, Early and Mid stages, 6-10-year-old age group, background of asthma, and those with ³2 other food allergies. Sesame Seed challenges need to be re-audited to compare the anaphylactic risk of tahini and Sesame Snaps®.

P.089

The walk to school: tree planting, air quality, global warming and their exponential impact on allergy and asthma

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Objectives

- Raise awareness of how and why planting in urban areas may increase allergies in children by exposure to higher levels of pollen, by:
- Presenting statistics of increased prevalence of allergic rhinitis, associated pollen-food syndrome, and respiratory allergy
- Explaining core principles of preventative solutions through appropriate selection, placement and maintenance of plants
- Recommendations to enable the best clinical research and practice in pollen related allergy and asthma.

Method

Literature and web search, sourcing clinical and scientific evidence e.g. low pollen planting techniques:

- Allergy UK Helpline and website statistics for rhinitis and asthma related enquiries triggered by pollens
- Impacts of climate change and global warming on increased pollen levels
- RHS research linking air quality, urban pollution and street trees
- Survey of landscape professionals' perceptions of pollen related allergy
- Quantitative and qualitative analysis of tree planting policies in UK
- Evaluation of published guidance on allergenicity of trees in cities around the world
- Impact of grass pollen allergy on attainment in school exams.

Results

- Prevalence of allergy and asthma higher in urban than rural environments
- UK has world's 3rd highest rate of allergic rhinitis
- Low pollen landscape policies developed in other countries
- Of 2,500 UK plant species only 13 commonly cause respiratory allergy
- Local proximity pollinosis
- "Horticultural sexism" - predominance of male tree clones increasing pollen levels.

Conclusions

Recommending

- Prioritising low pollen environments accessed by children and families
- Reduced exposure to allergenic pollen to reduce symptoms among atopic individuals
- Evidence-based, allergy-specific guidance to inform urban planning and green infrastructure development
- MDT approach to include horticultural specialists in planning and design.

Category: Basic Science

P.092

Improving e-learning of complex immunological pathways in allergy by using drag and drop mechanisms

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Objectives

Allergy is driven by complex immune pathways. Correct understanding of these pathways is crucial for management of allergies and development of future therapies. The Imperial College Allergy course team have previously used PowerPoint to allow students to assess their understanding of these immune pathways. Students are expected to assemble immune pathways that underpin key allergic diseases using a random list of immune cells, mediators and cell surface proteins. Two weeks post submission, students receive feedback. Current feedback from students suggest PowerPoint features are limited and feedback time is too long. As a result, the Imperial College Allergy course team developed a new online interactive exercise using Adobe Captivate and drag and drop mechanisms. Drag and drop mechanisms provide immediate low-level feedback. We hypothesized that drag and drop mechanisms built into well designed online immunology animations will improve the learning experience as well as aid revision.

Method

An adapted version of the validated user experience questionnaire (UEQ) was used to compare the new immunology online interactive exercise using drag and drop mechanisms and the old PowerPoint version. The primary outcome assessed user experience and usefulness as a revision aid.

Results

Interim-analysis suggests that the new immunology online interactive exercise using drag and drop improves student experience and facilitates revision better than the old PowerPoint version.

Conclusions

Well-designed immunology interactive exercises that provide immediate low-level feedback improve user experience and better facilitate revision than PowerPoint versions that are devoid of immediate feedback.

P.093

Structural and immunological characterisation of a broad-spectrum grass allergoid vaccine

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Objectives

Immunological and structural characterisation of a complex broad-spectrum grass allergoid vaccine was sought. Mapping IgG epitopes and their functional capacity to induce blocking antibodies for one of the major grass allergens (Lol p1) allows further insights into the mechanism of action for allergoid SIT and provides steps toward standardising allergoid vaccine formulations.

Method

Reduced allergenicity and maintained immunogenicity potential of a grass allergoid vaccine was determined using an ELISA inhibition platform. Specificity of immunogenic determinants including Lol p1 IgG-binding epitopes were identified via ELISA inhibition experiments with Lol p1 specific synthetic peptides. The blocking capacity of Lol p1 induced IgG was assessed via IgE ELISA specificity and SDS-PAGE/Western blotting.

Results

Attenuation of IgE immunoreactivity and maintenance of IgG immunoreactivity following glutaraldehyde modification of the mixed-grass native extract was confirmed. Retention of six Lol p1 IgG-binding epitopes on a solvent exposed area of the N-terminal domain of Lol p1 homology model was demonstrated. A novel IgG epitope was identified, not previously characterised, and was classified as immune-dominant. Lol p1 specific IgG antibodies exhibited functional capacity to block 50% of IgE binding sites from the native grass extract.

Conclusions

Structural and immunological characterisation of the mixed-grass allergoid vaccine formulation demonstrated a high degree of preservation of Lol p1 IgG binding epitopes. It supports the concept of using an allergoid vaccine for treatment of grass allergies and provides further insights of its immunogenicity potential. The blocking function of IgG antibodies reaffirms the protective function of immunotherapy induced antibodies.

P.094

Characterisation of a mite allergoid platform for subcutaneous immunotherapy (SCIT)

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Objectives

Allergen-specific immunotherapy using modified mite allergens adsorbed on tyrosine has been shown to exhibit clinical efficacy with enhancement in safety profile compared to native allergens. The objectives of this study were to assess allergen preservation following the modification process and immunoreactivity of major mite allergens of group 1 and 2.

Method

Whole mite culture was extracted, diafiltered to remove impurities and modified with glutaraldehyde. Mass spectrometry analysis of native mite extract vs. modified extract was performed across the molecular weight range 2-250 kDa to identify major and minor allergens present in the product. An ELISA platform was employed to determine absolute content of Der f 1 before and after modification. SDS-PAGE and Western blotting were used to confirm retention of immunoreactivity for major mite allergens from group 1 and 2 in the modified product.

Results

Detailed molecular fingerprinting of native vs. modified mite allergomes revealed the presence of an extensive range of mite allergens from faeces and whole bodies, including major allergens of group 1 and 2. In comparison with the native mite formulation, the modified formulation showed a consistent increase in the relevant molecular weight, confirmation in the sequence coverage and identification of various isoforms between group 1 and group 2 allergens. Allergen content analysis revealed a significant proportion of total protein content being quantified as group 1 major allergens. Immunoblot with monoclonal antibodies against group 1 and group 2 allergens from native and modified formulations confirmed immunoreactivity of these allergens in both cases.

Conclusions

Mass spectrometry analysis has shown a high degree of preservation of major and minor allergens representative of mite bodies and faeces in a modified vaccine formulation. The major group 1 allergen content was determined in native and modified formulations and immunoreactivity of modified group 1 and 2 allergens was confirmed.

P.097

Identification of allergens from *Trichoderma viride*: an important biofungicide

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Objectives

Immuno-proteomic study was performed aiming for determination of the allergenicity of *Trichoderma viride*, one of the prevalent airborne fungi in India as well as a well-known biofungicide, and also identification of allergenic components by mass spectrometry based analysis.

Method

Allergenic potential of *Trichoderma viride* was tested by Skin Prick Test. Sera were collected from SPT positive patients with their written consent. To confirm allergenicity, individual sera were used for in vitro tests like IgE ELISA and Total Histamine Assay. Total protein of *Trichoderma viride* was resolved in 12% SDS-PAGE and 2-Dimensional gel electrophoresis. To detect allergens, 1D and 2D Immunoblot were performed by using individual and pooled sera respectively. Periodic Acid Schiff's staining was done to detect the presence of glycoproteins in the allergen profile. Mass spectrometry based identification of allergens from IgE reactive spots was done by MALDI-TOF-TOF. Major allergen was partially purified by ion exchange chromatography.

Results

Individual sera with positive responses in SPT elevated specific IgE level against *Trichoderma viride* extract in ELISA and also induced a significant amount of total histamine. Seven IgE reactive proteins were detected as allergens from Immunoblot. Periodic Acid Schiff's staining showed negative results for allergens. 56% of *Trichoderma viride* allergic patients were sensitized to a predicted protein (54 kDa) by IgE immunoblot, which was identified as major allergen by MALDI-TOF-TOF. This major allergen (pI 5.214) was partially purified by ion exchange chromatography and showed its IgE reactivity by 1D immunoblot confirming successful partial purification of this allergen.

Conclusions

In the present study, seven allergens were identified from *Trichoderma viride* for the first time. Immuno-proteomic identification of all IgE reactive proteins is helpful for proper diagnosis and immunotherapy of atopic diseases.

P.098

Differentiation between peanut allergic, peanut-sensitized and non-allergic children's gene expression NanoString profiles using a random forest machine learning algorithm

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Objectives

We aimed to identify differences between peanut-specific responses of peanut allergics (PA), peanut sensitized (PS) and non-allergic individuals (NA). PS are clinically tolerant individuals having positive peanut skin prick tests and/or specific IgE and may pose diagnostic difficulties.

Method

We stimulated peripheral blood mononuclear cells from 8PA, 8PS and 8NA donors with peanut proteins for 18h in culture. We extracted RNA and then used the NanoString technology in order to determine the comparative gene expression in these samples, using the nCounter Human Immunology v2 panel that comprises 593 immune response genes.

Results

We found that the best differentiator between PA, PS and NA is a set of 5 genes involved in inflammatory responses: IFNAR1, CXCR1, CCL16, IL18R1 and IL1RAP. IFNAR1 is the receptor for interferon alpha/beta and knockout mice display decreased antiviral responses. CXCR1 is the receptor for interleukin 8, CCL16 is chemo attractive for monocytes and lymphocytes whereas IL18R1 and IL1RAP are receptor and co-receptor for interleukin 18 and interleukin 1 respectively. This gene set allows a classification accuracy of 91.6%. Using only the top two genes (IFNAR1 and CXCR1) slightly decreases classification accuracy to 83.3%.

When aiming to distinguish between only two classes, fewer gene combinations were required for achieving similar levels of classification accuracy. Thus, in order to distinguish NA patients from all others, the combination of IFNAR1 and CD45RB gave 95.8% accuracy. When PA patients were compared to all others, the combination of CCL16 and CD34 gave 87.5% accuracy whereas when comparing PS patients to all others the combination of CXCR1 and IL1RAP gave 91.6% accuracy.

Conclusions

We could not find any unique biomarker gene that could differentiate between PA, PS and NA. Nevertheless, 2-gene and 5-gene sets can differentiate between these phenotypes suggesting that peanut sensitization is immunologically distinct from clinical allergy.

Category: Allied Health

P.101

The impact of atopic dermatitis on quality of life in adults- a systematic review and meta-analysis

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Objectives

Atopic dermatitis (AD) can affect quality of life (QoL) of adult patients, in whom the condition can be severe and persistent. This paper provides the first systematic literature review of the impact of AD on QoL in adults.

Method

A systematic search was conducted using MEDLINE, Scopus, and Web of Science for articles published until July 2016; 23 articles were included in total. A combination of subject-headings and search terms were employed in order to optimize the comprehensiveness of the search. Databases were searched for the following terms: Atopic Dermatitis, Atopic Eczema, AD, Atopy, quality of life, QoL, HRQoL, well-being, health status, and their spelling variations

Results

While QoL was assessed using Dermatology Life Quality Index (DLQI) in 20 studies, there was heterogeneity in the tools used to measure disease severity across studies. Meta-analysis of the five studies that used the SCORAD to measure disease severity showed that greater disease severity is related to poorer QoL. The remaining 12 studies found increased disease severity significantly related to poorer QoL. When compared to healthy controls, AD patients demonstrated significantly lower QoL but findings were mixed in studies that compared QoL in AD to other chronic conditions.

Conclusions

The findings of this review highlight the significant impact that AD has on QoL in adult patients and the need for validated and relevant QoL measures to be implemented in clinical assessments for AD. Areas that require further research include an exploration of gender differences in QoL and the use of longitudinal study designs to explore factors that may cause differences in QoL ratings.

P.102

Legume allergy prevalence and reported cross reactivity rates in a tertiary referral population

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Objectives

Legume allergy (beans, chickpea, lentils and peas) is commonly reported but not well documented in the literature. It's unclear whether, in legume allergic children, selective legume consumption is safe. Currently, there is no consensus and practice varies depending on patient history, test results and clinician and patient preference. Our aim was to establish which legume allergies were reported, which commonly occurred together and current avoidance behaviours.

Method

We collected data from children with legume allergy seen between January 2016 until May 2017. Patient details were collected from a search of electronic patient records (EPR) and from clinician's referrals. Parents were then contacted by telephone to complete a questionnaire (n=51). Fifty participants agreed to take part.

Results

The most commonly reported legume allergy was lentil (80%) and least common was bean (46%). Allergy to all legumes was reported in 11 children (22%). However, 23 (46%) were avoiding all legumes. Immediate symptoms consistent with IgE reaction were reported to the primary allergen by 42 children (84%). Cross reactivity between lentil and chickpea, and lentil and pea was common affecting 29 children (73%). Lentil and bean cross reactivity was less common affecting 19 children (48%). Selective legume eating was rare. Beans were most commonly selectively consumed (n=8, 30%) followed by pea (n=7, 19%) and lentil (n=2, 5%). No patient selectively ate chickpea. Few patient reported tolerance over time. Three patients (8%) reportedly became chickpea tolerant, 2 pea (6%), 1 lentil (3%) and 1 bean (5%).

Conclusions

22% of our legume allergic children reported polysensitisation to all legumes. Blanket avoidance is the dietary approach commonly adopted. Selective legume consumption is infrequent. In the future, we would like to establish challenge proven rates and improve our understanding of legume cross reactivity.

P.103

An audit and evaluation of patient experience in a newly established specialist adult allergy dietetic outpatient service at University Hospitals Trust Southampton (UHS)

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Objectives

Food allergy can have a negative impact on patient quality of life. Before January 2016, the asthma allergy and clinical immunology service at UHS had no dietetic support. Specialist allergy dietetic support is now established in the allergy clinic.

1. To use a validated patient experience questionnaire to establish whether the addition of specialist allergy dietetic support to the allergy clinic was perceived by patients in a positive manner.
2. To audit against the standard: An average score of ≥95% will be achieved for patients rating their experience of the allergy dietitian consultation as good, very good or excellent across all questions.

Method

All patients attending a new outpatient consultation with the allergy dietitian from May 2016 - December 2016 were asked to complete an anonymous questionnaire (The validated CARE Patient Feedback Measure) after their consultation. This comprised 10 fixed response questions and a free text section. Responses were collated and analysed using Microsoft Excel.

Results

As this was a new service, clinic space was initially limited and restricted the number of patients who could be seen.59 new patients attended.54 questionnaires were returned (response rate 91.5%).The average score for patients rating their experience as good, very good, or excellent across all questions was 100% demonstrating that access to a specialist allergy dietitian was perceived positively by all respondents. This exceeds the audit standard set at 95%. Twenty-nine respondents (53.7%) provided additional comments. Common themes arose indicating that the dietitians showed empathy and understanding of the patients' experience; and provided information, reassurance, and guidance, helping improve patients' understanding of how best to manage their food allergy. Patients reported feeling more confident and positive following their consultation and that the dietitian helped them formulate a food allergy management plan.

Conclusions

Provision of specialist allergy dietetic support has a positive impact on patient experience and can help improve patient quality of life.

P.104

Patient experiences of clinical research participation survey

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Objectives

Whilst trial monitors and regulatory inspectors perform checks on research standards and compliance, participants' satisfaction with clinical trial processes is not routinely monitored.

Aim

To record research participants' opinions about the conduct of a clinical study.

Method

On-line survey using 5 point Likert rating scale, multiple choice answers and free text, addressing the following areas: informed consent, well-being and safety, privacy and confidentiality, communication with researchers, and overall satisfaction. All participants who had previously participated in one of two single-centre, randomized, double-blind clinical trials conducted in our department were invited to complete the survey.

Results

58% (74 out of 127 research participants) completed the survey, 66% of them were males. Personal health gain (49%) and a desire to help research (39%) were the main motivators for trial participation. The majority of respondents rated overall experience of the trial and the satisfaction with organization and conduct of the trial as "positive" (89% participants "strongly agreed" and 10% "somewhat agreed"). The highest levels of satisfaction were in the areas of the consent process, privacy and confidentiality and overall satisfaction with being in the trial; the lowest in the perception of safety and actual experience of adverse effects. 5% of participants were dissatisfied with the way the trial results had been communicated/not communicated. 8% of participants did not know they could withdraw from the study.

Conclusions

The majority of participants had a positive experience of being in a trial. Emphasis needs to be placed on ensuring that all participants are aware of trial outcomes. Safety concerns surrounding treatment and procedures need particular attention when counselling participants about inclusion in clinical trials. Freedom to withdraw consent at any stage still requires emphasis.

P.105

The benefits of group education sessions for parents of infants and children with a Cow's Milk Protein Allergy (CMPA) in Walsall, West Midlands: a pilot

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Objectives

The objective of this pilot was to run group sessions to educate parents on managing their child's CMPA (following a milk-free diet and introducing the milk ladder) to reduce the number of follow-up patients seen in dietetics clinics.

Method

Forty patients and their parents were booked into the group sessions in a four-month period (10 patients per session) a few months after being seen on a one-to-one basis and being advised on the initial management of CMPA. The pilot started in November 2016 and took place in a local medical centre, once a month for 60 minutes and the parents were notified of the sessions via the post. After the session, each parent signed a register, completed an evaluation form and received a CMPA information pack.

Results

Of the forty patients booked into the sessions, twenty patients attended (many of whom were siblings) and of those twenty, eighteen were discharged from the dietetics service and two were reviewed again in clinic at parent's request. The non-attenders were discharged from the service. Those attending the sessions were happy with them but found it difficult to concentrate whilst simultaneously having to look after their children. There were no telephone queries about CMPA from parents after attending the group sessions.

Conclusions

The pilot proved the group sessions to be effective and valuable as several patients were seen at the same time and discharged, thus reducing the number of patients seen individually in outpatient dietetic clinics, waiting times and telephone queries. The parents received all of the necessary information and were confident in managing their child's CMPA and they were able to share tips and ideas. Larger venues were needed to host the parents, patients, equipment and seating and as a result of the pilot, the dietitians in Walsall still run these group sessions.

P.106

A thematic analysis of coping in children aged 8-11 years old with a food allergy

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Objectives

Studies have found that children and adolescents employ a variety of strategies to help cope with a food allergy, with some strategies associated with the transition to adolescence. However, few of these studies explore coping with a food allergy in children below the age of 11 years old. It is, therefore, unclear if children below the age of 11 use similar coping strategies to those over the age of 11, or if coping strategies differ in this age group. This study aims explore and understand how children aged 8 – 11 years old cope with a food allergy.

Method

Individual interviews were conducted (either face to face or via Skype) with nine children between the ages of 8 and 11 years old. Children were recruited either from allergy clinics in Birmingham, or through Allergy UK. Interviews were recorded and then transcribed verbatim. The transcripts were analysed using thematic analysis, following the guidelines by Braun and Clarke (2006).

Results

Thematic analysis produced four themes that explore how children in this age group cope with their food allergy. 1) Coping with risk and resisting temptation, 2) Food allergy knowledge, 3) Support of others, 4) Coping with emotions and managing the food allergy identity. Themes highlight that children below the age of 11 are able to cope with their food allergy both practically and emotionally. For example, those interviewed discussed developing their own strategies to avoid risk, and also had a good level of knowledge and understanding of their food allergy. Support is important when it comes to managing their food allergy, with a heavy reliance on parents and other adults, especially when out in public. Nevertheless, the children were starting to develop independence in managing their food allergy, for example, by carrying their auto-injectors with them. The children interviewed also discussed managing their food allergy in different situations, for example at school or socially with friends, and how they cope with this.

Conclusions

Results from this study provide some of the first evidence that children aged 8 to 11 years old are able to cope with their food allergy independently of their parents by developing strategies that allow them to manage their condition. Data also demonstrates that children in this age group are starting to develop their sense of independence and take on responsibility for their food allergy management. These findings help us to add to the existing literature in this field, where children below the age of 11 are underrepresented in comparison to their older peers.

P.107

Treatment of anaphylaxis from General Practitioners and Specialists. Do they know what they are supposed to do?

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Objectives

Anaphylaxis is a severe and potentially life-threatening multisystem allergic reaction. Prompt recognition and appropriate treatment by medical professionals is vital. The aim of this study was to assess the knowledge of anaphylaxis management by general practitioners and physicians.

Method

Data were collected from a questionnaire designed by our team and given out prior to educational sessions. Data from 86 medical professionals was collected. General Practitioners (n=44) and Specialist Doctors (n=42).

Results

70% of the participants (59/86) had received anaphylaxis training and 63% (54/86) said they were confident in treating anaphylaxis. However, only 10% correctly reported the correct dose, route and concentration of Adrenaline during an anaphylactic reaction.

In the case of anaphylaxis whilst 83% of respondents would use Adrenaline as first choice drug, 79% would administer an incorrect adult dose, 70% would use an incorrect concentration and 9% would inject adrenaline subcutaneously. Furthermore, over 65% of physicians were unaware that patients should be treated in a supine position with legs raised if their breathing is not impaired.

If the patient had urticarial rash as their only symptom then 14% of medical staff would give Adrenaline as the first line drug of choice. If the urticarial rash was associated with throat tightness, hypotension or wheeze the percentages would increase to 75%, 81% and 70% respectively. Only 37% of respondents would administer Adrenaline as a first line agent if wheeze was the only symptom.

Conclusions

Physicians and GPs are frequently the first line responders in anaphylaxis. Only 10% of those questioned knew the correct dose, route and concentration of Adrenaline. The majority of medical professionals would not give adrenaline if wheeze was the only symptom. This knowledge gap suggests improved training and the use of clear posters and cognitive aids could improve the diagnosis and management of anaphylaxis by medical practitioners

P.108

A retrospective study to look at the incidence of children attending Leicester Children's Allergy service with fish allergy

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Objectives

Fish is encouraged as part of a healthy diet. Oily fish is a good source of omega 3 and 6 oils. Fish allergy is uncommon in children. We wished to look at retrospectively at the characteristics of children attending Leicester children's allergy service between 2012 and 2016. We also sought to discover if all fish and shellfish groups were implicated as causative allergens.

Method

Clinic audit material including letters to professionals and families, and case notes were examined.

Results

Only 25 children were confirmed to have fish allergy, 19 of which were to cod or other white fish. The type of fish was unknown in 5 children, however, there were no recorded episodes of primary fish allergy reaction to oily or coloured fish alone. The incidence was higher amongst males (56%) with the majority of allergic reactions involving skin symptoms followed by gastrointestinal symptoms. Only 1 child had respiratory symptoms. None are recorded to required adrenaline with the majority of children being treated at home with antihistamine only. Only 2 children were reported to react with skin symptoms only to aerolised fish during cooking. Eczema was the most common atopic co-factor followed by rhinitis then asthma. 2 children had no atopic history with 5 children having eczema, rhinitis and asthma. Other food allergies were common: primarily nuts, egg and milk with multiple food allergy present in 7 children. 8 children had no history of any food allergy. All children were skin prick tested to fish and shellfish. Where negative to oily fish and/or shellfish, families were advised by the dietician to introduce these into the child's diet. This was mostly in the form of tinned tuna.

Conclusions

Retrospectively, fish allergy accounts for low numbers of children attending allergy clinic. This audit will be reviewed prospectively for future changes.

P.109

Development of a prototype scale to measure quality of life in adults with anaphylaxis (A-QoL-Adults)

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Objectives

Anaphylaxis is a severe and potentially life threatening allergic reaction to allergens such as drugs, venom and food and can also be idiopathic (spontaneous). It has a detrimental impact on quality of life (QoL) however there are no validated scales to measure the impact of anaphylaxis on QoL of adults. The aim of this study was to develop a QoL scale for adults with anaphylaxis from any cause.

Method

Interviews were conducted with 12 participants recruited from allergy clinics in the Heart of England NHS Trust, Birmingham, UK. Data was transcribed verbatim and analysed using thematic analysis to extract items for a quality of life scale.

Results

Participants (F=7; M=5) reported anaphylaxis to food (n=3), drugs including general anaesthetic (n=4), bee venom (n=2), or idiopathic anaphylaxis (n=3). Item extraction resulted in a prototype QoL scale with 36 items. A total of 28 items are relevant for adults with anaphylaxis to any cause and include questions such as ‘I feel scared that I might have an anaphylactic reaction' and ‘my family help keep me safe from having an anaphylactic reaction'. There are 8 items that relate to specific causes of anaphylaxis such as ‘I avoid sitting outside because of the risk of getting a bee or wasp sting' or ‘I am frustrated that I do not know what has caused my anaphylaxis'. The prototype scale has been reviewed by clinicians with expertise in treating adults with anaphylaxis, psychologists with expertise in scale development and by patients with anaphylaxis and is now undergoing reliability and validity testing.

Conclusions

The use of a reliable measure of QoL in adults with anaphylaxis will offer health care professionals a means to further understand the impact it has on their patients and could help direct and monitor suitable interventions including immunotherapy and psychological support.

P.110

A service evaluation of adult patients given advice to reduce intake of dietary vasoactive amines

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Objectives

To review the outcome of reducing dietary vasoactive amines via a service evaluation.

Method

Adult patients who had been advised between April 2014-March 2016 to reduce dietary vasoactive amines for various medical diagnoses were sent a service evaluation questionnaire and their notes reviewed. Food allergy had been ruled out via a detailed history and allergy testing as appropriate.

Results

Twenty-one of 31 (68%) questionnaires were returned. Eight (38%) reduced dietary vasoactive amines intake only, 13 (62%) also avoided other foods; wheat/gluten: 5 (38.5%), milk/lactose: 4 (31%), dietary chemicals: 5 (38.5%), peanuts and tree nuts: 4 (31%) and soya: 2 (15%). Ten (48%) recorded significant improvement in overall symptoms, 9 (43%) somewhat improved, 1 (4.5%) slightly improved and 1 (4.5%) did not improve.

Of the 8 patients who avoided dietary vasoactive amines only: 6 (75%) recorded improvement in skin symptoms (urticaria, rosacea, itching, eczema); 4 (50%) in gastro-intestinal symptoms (wind, bloating, abdominal pain, altered bowel habit); 5 (63%) in respiratory symptoms (rhinitis, sinusitis, wheeze); and 3 (37.5%) in other symptoms (anxiety, joint pain, depression). Five (62.5%) reported significant improvement in overall symptoms, 2 (25%) some improvement and 1 (12.5%) no improvement. Foods found to be related to symptoms included cheese, pork products, citrus, alcohol, coffee, chocolate and tomato.

Conclusions

Research into sensitivity to dietary vasoactive amines is limited and insufficient data exists to produce a definitive list of foods. However foods found to be related to symptoms in this evaluation are commonly reported to be high and avoidance of these foods alone or in combination with other dietary changes helped to improve a variety of symptoms. This evaluation will be used to help develop further prospective research into identifying which patients may benefit from reducing intake.

P.111

The value of allergy tests in predicting the outcome of oral food challenges to peanuts and tree nuts in adults

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Objectives

To determine whether the outcome of an oral food challenge to peanuts in adults can be predicted from allergy tests, including component-resolved diagnostics (CRD).

Method

Oral food challenge data was collected and reviewed retrospectively. Results from skin prick tests, specific IgE blood test, component tests to individual peanut allergens and outcome of the oral food challenge were monitored and documented. Skin prick tests included both tests using reagents and fresh foods using the prick to prick method. Oral food challenges were carried out using internationally agreed methods and dosages as outlines in the PRACTAL guidelines. The outcome of the challenge was then compared to the history and test results to determine whether the diagnosis could have been made on the test results alone.

Results

From 2015-March 2017, 27 patients(14m, mean age 27 years, range 17-53) were challenged to peanuts. 81.4% had a negative challenge outcome and 18.5% were positive. Of the 22 patients with a negative challenge, 3/19 had a positive skin prick test, 7/15 had a positive specific IgE blood test to peanuts, and 1/19 a positive test to Ara h 2, the main peanut allergen linked to peanut allergy.
Five patients had a positive challenge; two presented with symptoms typical of oral allergy syndrome, a positive skin prick test to peanuts and positive test to Ara h8, the peanut allergen which cross-reacts to birch tree pollen. Both patients had a negative test to Ara h2. The other three patients had symptoms consistent with peanut allergy; all of them had a positive skin prick test and positive Ara h2. Two of the patients experienced delayed reactions (> 2 hours after the first dose), the other patient had a reaction 10 minutes after challenge was started. Ara h1 and Ara h3 were negative in 100% of the cases.

Conclusions

A negative skin prick test and negative Ara h 2 are good predictors of a negative oral food challenge in adults with reported peanut allergy.

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Evaluation of patient experience during the referral process to the Specialist Nurse-led eczema clinic

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Objectives

To determine the effectiveness and impact of the current referral process to the nurse led eczema clinic on patients, families and carers.

Method

20 new patients with moderate/ severe eczema seen in eczema clinic over a 4 month period were given questionnaires to ascertain the number of visits to GP/ A&E prior to referral. Referral letters and A&E discharges were reviewed, referral time to paediatrician and then to eczema clinic were also measured. The parents were asked to fill in a QOL questionnaire for how they felt at point of referral retrospectively and then in real time at eczema clinic.

Results

Findings showed that it took between 2-18 visits to the GP with 8 patients attending A&E between 1-4 times prior to referral, with waiting times of between 2-8 months. Following GP referral parents wait an average of 6 weeks for a paediatric appointment and a further 6 weeks for eczema clinic. All patients reported a worsening of severity of eczema and a decrease in QOL during this process.

Conclusions

The referral process to the nurse-led eczema clinic is ineffective thus impacting on severity of symptoms, patient care and quality of life.

Category: Primary Care

P.113

Primary Care Paediatric Allergy Regional Training Day: Does it have the ability to change the landscape of managing Paediatric Allergy?

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Objectives

To review the impact of the Training Day on participants' knowledge and understanding of common Paediatric allergic conditions and respective guidelines.

Method

We conducted a survey from GPs around East and North Hertfordshire who attended the Training Day using pre- and post-course questionnaires which we specifically developed for the course.

Results

20 GPs attended and completed the pre-course questionnaire; however, only 16 completed the post-course questionnaire.

Majority responded that they saw children with eczema (16/20) and allergic rhinitis (13/20) very often. About half of respondents often saw patients with cow's milk allergy (10/20), whilst (8/20) often saw patients with egg or single-food allergies. Majority rarely or seldom managed chronic urticaria.

Before the course, about half did not feel confident in managing cow's milk allergy (11/20), egg and single-food allergy (9/20), and chronic urticaria (10/20). Most were confident in managing anaphylaxis (19/20), allergic rhinitis (18/20), and eczema (18/20) and familiar with guidelines, but not with the other conditions. Most GPs felt that allergic rhinitis (17/20) and eczema (18/20) can be managed effectively in Primary care, whilst majority felt that anaphylaxis was best managed in secondary care (13/20). Responses were divided between Primary and Secondary Care for the other conditions.

After the course, all GPs rated the training Day as ‘very good' or ‘excellent' based on topic contents, attained objectives, relevance to practice, and effectiveness of speakers, and reported feeling ‘confident', ‘very confident' or ‘feel able to manage these conditions independently'. Majority felt that these conditions can be managed effectively in Primary care, except for anaphylaxis which they felt is best managed in secondary care (10/16). 90% felt that guidelines for these conditions were covered adequately.

Conclusions

All GPs benefited from the Training Day by reporting increase in confidence in managing these Paediatric allergic conditions through knowledge gained about current guidelines.

P.114

Non-specialist management and referral pathways in allergy

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Objectives

The demand for Allergy Services is increasing and there is a growing need for the training and education of General Practitioners and other Allied Health Care Professionals in managing allergic disease in the Primary Care setting. Some patients with mild to moderate allergic disease such as seasonal rhinitis, or with urticaria/ACE-Inhibitor related angioedema, can be treated successfully by Primary Care Physicians without the need for specialist Allergy Clinic review. Furthermore, introducing these pathways will hopefully allow for the more immediate management of these patients who may have otherwise experienced a delay in their treatment commencing, whilst awaiting an appointment in the Allergy clinic. Our objective was to develop Primary Care referral pathways for Allergic Rhinitis and Urticaria and Angioedema to assist General Practitioners in the initial assessment, management and onward referral to the Allergy Clinic for these conditions.

Method

Referral and management pathways for Rhinitis and Urticaria and Angioedema were developed by the Sheffield Clinical Immunology and Allergy Unit with input and review by the Sheffield Clinical Reference Group (consisting of General Practitioners, Public Health Specialists and other Allied Health Care Professionals).

Results

We describe two General Practice Allergy referral and management pathways for Rhinitis and Urticaria and Angioedema.

Conclusions

These referral pathways aim to educate and support Primary Care Health Professionals with the symptomatic management of mild allergic disease, to provide closer working links between Primary Care and Specialist Allergy centres and ultimately, to improve patient experience and outcomes. Also, there is a potential cost saving for General Practitioners who may refer fewer patients to the Allergy clinic as a result of using these pathways. This is in line with the Next Steps Five year forward view of enhanced primary care and developing closer links with specialists to reduce the need for referrals when certain patients can be managed within primary care.

Category: Undergraduate

P.115

Allergy teaching in UK medical schools

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Objectives

It is acknowledged that the provision of allergy teaching in UK medical schools is variable, despite the well-recognised need to increase the provision of allergy care nationally[1]. An estimated 30% of the population has an allergic condition, and in any given year, one-fifth were likely to be seeking treatment for an allergy-related condition[2]; yet services are failing to meet the minimal standards of care. The House of Commons Select Committee report and the Department of Health review (2004) concluded that developments were urgent, but effective action is yet to be made[3]. The primary aim of this study is to record the level of allergy teaching currently delivered in UK medical schools.

Method

All consultant members of the British Society for Allergy and Clinical Immunology involved in teaching medical students were invited to complete an online survey. Participants were asked to respond regarding the format of the teaching delivered, the student participation and the clinical opportunities provided. Students were recruited to complete a similar survey as supporting evidence.

Results

43 responses were collected, representing more than 60% of medical schools in the UK. Clinical allergy placements were compulsory in 30% of the medical schools that responded. In over 40% of these medical schools, it was reported that <10% of students had the opportunity to take an independent history from a patient with an allergic condition, or rehearse the use of self-injectable adrenaline. Over 70% stated that <10% of students had experience of skin prick testing and that placement in allergy was not offered to final year students.

Conclusions

The UK has one of the highest allergy rates in the world, however, the survey highlighted that allergy teaching amongst UK medical schools is both limited and heterogeneous. Therefore, there is an evident need to standardise the allergy curriculum.

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A rare case of respiratory arrest following hyperventilation in a patient with anaphylaxis

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CASE PRESENTATION

Background

Anaphylaxis is an acute and potentially life-threatening syndrome. To our knowledge, this is the first reported case where an anaphylactic reaction resulted in hyperventilation and respiratory arrest.

Case Presentation

A 14-year-old girl presented to A&E with anaphylaxis after eating a supposedly dairy-free brownie. The patient, who has a known milk allergy, presented with a widespread urticarial rash and shortness of breath. After treatment of intramuscular adrenaline in the community and intravenous steroids in A&E she improved, but was admitted for overnight observation. Whilst asleep, she began to hyperventilate, resulting in respiratory alkalosis and subsequent respiratory arrest. She was unconscious for 5 minutes, with a GCS of 3. After airway intervention, she regained consciousness. This occurred multiple times.

Discussion

Asthma and other diseases have previously been linked to hyperventilation and respiratory arrest, however a case of anaphylaxis has not. Extensive investigations were performed on this child and no cause could be identified for these episodes. The child has been referred to sleep study clinics for further evaluation.

Conclusions

The pathophysiology of this patient's respiratory arrest secondary to hyperventilation is still unexplained but this case emphasises the importance of looking into other forms of presentation in children with anaphylaxis.

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Fatty acid supplementation during pregnancy, lactation or infancy and risk of allergic outcomes: a systematic review

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Objectives

Early nutrition may influence immune development, and risk of future allergic outcomes. We assessed whether fatty acid supplementation during pregnancy, lactation or infancy can influence risk of allergic outcomes.

Method

We undertook a systematic review and meta-analysis, sourcing data from MEDLINE, EMBASE, Web of Science, CENTRAL and LILACS, with the search being conducted between January 1946 and February 2017. Two authors independently selected studies, extracted data, and assessed the quality of included studies using the Cochrane Risk of Bias tool. GRADE was used to assess the certainty of evidence. Eligible studies included prospective intervention trials evaluating the relationship between diet during pregnancy, lactation or the first year of life and risk of allergic disease or allergic sensitisation.

Results

We identified intervention trials investigating the effect of omega 3 fatty acids (n-3) or omega 6 fatty acids (n-6) during infancy and/or pregnancy on allergic outcomes. We found moderate certainty evidence that n-3 fatty acid supplementation during pregnancy reduces the risk of allergic sensitisation to egg in high-risk infants (RR 0.69; 95% CI 0.53 to 0.90; I^2 = 15.3%). We found no clear evidence for the same effect on allergic sensitisation to peanut (RR 0.75; 95% CI 0.54 to 1.04; I^2= 0%). In subgroup analyses the effect on allergic sensitisation was only seen in studies, which supplemented mothers during pregnancy (RR 0.58; 95% CI 0.42 to 0.79; I^2= 0%; P value for subgroup difference = 0.05). Data were sparse and inconclusive for clinical food allergy, and we found no evidence that fatty acid supplementation during pregnancy, lactation or infancy has an impact on the risk of wheezing, eczema or allergic rhinitis.

Conclusions

These findings suggest that further trials are needed to investigate the use of omega-3 fatty acid supplementation during pregnancy for the prevention of food sensitization and allergy.

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Assessing the timeliness of introducing allergenic foods to sensitised infants in clinical practice

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Objectives

Food allergy can be prevented by the early introduction of allergenic foods amongst infants, however the timing of doing so is crucial. In particular, peanut and egg introduction should be safely expedited where possible to prevent infants' later development of food allergy. This audit aims to evaluate the timeliness of our current allergenic food introduction pathway for sensitised infants attending St Thomas' Hospital.

Method

A retrospective data analysis was undertaken of 52 consecutive infants attending clinical appointments between 1/12/2016 and 18/01/2017.

Results

The infants were 8 months 25 days old on average. All 52 patients received skin prick testing, with 53.8 % (28/52) being tested with egg extract and 67.3% (35/52) tested for peanut extract. 71.1% (27/38) patients demonstrated no sensitisation to egg or peanut on skin testing.

The 13 patients demonstrating sensitisation to egg had a median sensitisation of 5mm and 8/13 were diagnosed as egg allergic. Of the egg sensitised infants without egg allergy, 80% (4/5) had an egg skin prick test of ≤4mm and none of these were offered a supervised introduction.

Of the 12 patients demonstrating sensitisation to peanut had a median sensitisation of 4.5mm and 75% (9/12) were already peanut allergic in the context of history. Of the peanut sensitised infants without allergy, 100% (3/3) had a peanut skin prick test of ≤4mm and all of them were offered a supervised introduction. One attended before 09/01/2017 and unfortunately vomited and demonstrated hives.

Conclusions

Our service has been offering supervised introduction to 16.7% (1/6) of egg and 83.3% (5/6) of peanut sensitised ≤4mm infants amongst those without clinically determined allergy. We aim to:

- Assess younger infants
- Increase the proportion of egg and peanut sensitised infants offered supervised introductions in a timely manner
- Shorten timeframes for supervised introduction
- Understand why families do not attend for supervised introductions