THE PREVALENCE OF IgE-MEDIATED FOOD SENSITISATION AND FOOD ALLERGY IN UNSELECTED 12-36 MONTH OLD URBAN SOUTH AFRICAN CHILDREN

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INTRODUCTION: Food allergy (FA) was previously thought to be uncommon in South African children but there is increasing evidence that it may be on the rise. There is no data on the prevalence of FA in unselected South African children, a shortfall which this study addresses.

METHODS: This cross-sectional study recruited 12-36 month old toddlers from randomly selected registered crèches in Cape Town. Parents of eligible children in the crèche completed a questionnaire and the children had skin prick tests (SPT) for cow’s milk, egg, soya, wheat, peanut, hazelnut and fish (cod). Participants with SPT test >1 mm, who were not tolerant to that food had an OFC to assess for IgE-mediated food allergy. Parents choosing not to participate completed a non-participant questionnaire to control for bias.

RESULTS: Of 435 eligible participants, 281 responded (65% response rate) and 253 of 263 enrolled participants completed the study (96% completion rate). Of 10 children meeting the criteria for OFC, 7 completed challenges. Participants were black African (42.3%), Caucasian (13.0%) and Mixed Race (44.7%). The prevalence for SPT ≥1 mm to any food was 11.9% (95% CI: 7.9-15.9%), SPT ≥3 mm 9.8% (95% CI: 6.2-13.6%), ≥7 mm 4.0% (95% CI: 1.5-6.4%) and OFC confirmed food allergy 1.2% (95% CI: 0.2-3.4%) (3 food challenges remain to be done meaning that 1.2% is a minimum value for the prevalence of FA). The most common sensitisation was to egg and then peanuts. Sensitisation ≥1 mm to fresh egg was 8.3%, 7.5% ≥3 mm, 4.0% ≥7 mm with 2 (0.8%) positive OFC’s. Sensitisation ≥1 mm to peanut was 4.7%, 3.6% ≥3 mm and 1.2% ≥7 mm with 2 (0.8%) positive OFC’s. Sensitisation ≥1 mm for soya was 2.0%, wheat 1.6% and for cow’s milk, fish and hazelnut 1.2% each. 4.7% of participants were poly sensitised. In general, sensitisation in Black African and Mixed Race children were slightly higher than in Caucasian participants, viz at SPT ≥1 mm 12.8%, 11.6% and 9.8% respectively; SPT ≥3 mm 11.9%, 8.0% and 9.7% respectively and SPT ≥7 mm 4.6%, 3.5% and 3.2%.

CONCLUSION: This is the first food challenge proven prevalence of FA determined in unseleced children in Africa and provides a basis for further monitoring of a population possibly only at the beginning of the food allergy epidemic. Although not statistically significant the higher sensitisation rates in Black African and Mixed race children are similar to the high rates of aeroallergen sensitisation seen in unselected and allergic populations. Further expansion in the next phase of the study will compare the prevalence of sensitisation and food allergy between urban Caucasian, Mixed race and Black African children and between rural and urban Black African Xhosa children and generate population-specific cut-off levels for SPT and Immunocaps with 95% positive predictive values.

A CELL PHONE “APP” FOR ASTHMA CONTROL

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INTRODUCTION: Asthma control is a moving target for most patients and most asthmatics are not well controlled when formally assessed. The most useful measure of asthma control is the (childhood) Asthma Control Test (cACT). Previous studies have shown that no one measure of asthma control assesses all asthmatics but a useful test is the cACT.

METHODS: A cell phone ‘app’ was developed by Sancreed, known as ‘Guidepost’. This ‘app’ incorporates assessment of asthma control through the cACT/ACT and then this is followed by a number of pop-up messages to aid in achieving control. The ‘app’ was given to a number of children attending the Children’s Chest and Allergy Clinic at the Steve Biko Academic Hospital in Pretoria. Although children were asked to record input weekly, the study compares asthma control from baseline to 1 month.
RESULTS: 16 patients received the ‘app’. Thirteen subjects utilised Guidepost over one month. At the start of the programme, 30.7% of patients were controlled and this rose to 84.6% at study end. There was an average of 53.9% improvement for subjects. This was a 6 point overall improvement in scores.

CONCLUSION: Guidepost is a useful device to promote asthma control in children. Any tool to promote asthma control should be widely distributed.

DESCRIPTION AND OUTCOME OF 202 ORAL FOOD CHALLENGES IN A TERTIARY PAEDIATRIC ALLERGY CLINIC IN SOUTH AFRICA

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INTRODUCTION: The diagnosis and confirmation of food allergies can be challenging. The gold standard for diagnosing food allergy is the double-blind, placebo-controlled oral food challenge, however open food challenges (OFC) are useful to exclude food allergies, especially in young children who have fewer subjective symptoms.¹

METHODS: Retrospective, descriptive study of children who presented to Red Cross Children’s Hospital’s tertiary Allergy clinic with food allergies and subsequently had OFC during the 39 month period from February 2011 to April 2014.

RESULTS: Two hundred and two OFC were performed on 142 children (age 9 months to 14 years). Challenges were performed to 18 different foods. Egg, peanut, baked egg and cow’s milk made up the largest number of challenges at 64, 37, 29 and 25 respectively. Ninety four (66.2%) children had a single OFC while 39 (27.5%) had 2 challenges and 9 children had more than 2 challenges. Thirty eight (18.8%) challenges were positive with reactions varying from mild rash to wheeze. The rate of positive reactions increased significantly over the study period from 11.6% (n=5/43) in 2011 to 14.5% (n=10/69) in 2012, 21.5% (n=14/65) in 2013 and 36% (n=9/25) in 2014 (p=0.01). This probably reflects the inclusion of more high risk challenges as clinic experience grew. The most common reaction was urticaria in 23 (60.5%) and angioedema in 11 (28.9%). Three (7.9%) had wheezing. Fourteen percent of egg challenges (n=9/64), 35.1% of peanut challenges (n=13/37), 17.2% of baked egg challenges (n=5/29) and 20% of cow’s milk challenges (n=5/25) had a positive outcome. There was a significant difference between the median age at challenge (egg 53 months, peanut 67 months, baked egg 38 months and cow’s milk 29 months) (p=0.01 comparing the four groups). Baked egg challenges with positive outcomes (median 13 months) occurred in younger children than those with negative food challenges (median 44 months) (p=0.04). Younger children had a higher incidence of positive OFC, 33.3% in those below 2 years (n=14/42) and 9.2% (n=24/260) in children above 2 years (p=0.01). Co-morbidities were common in our population; atopic dermatitis was present in 73.9% (n=105/202), asthma in 37.3% (n=53/202), allergic rhinitis in 45.8% (n=65/202) and allergy to multiple foods in 62.7% (n=89/202). Co-morbidity prevalence was significantly different between groups with positive and negative OFC outcomes (p<0.01).

CONCLUSION: Oral food challenges are necessary to accurately diagnose children with food allergies and to assess development of tolerance. The majority of food challenges are negative, and in those which are positive, reactions are usually mild and treated early. With increased utilisation of OFC’s, increased numbers of true food allergy diagnoses are made. The prevalence of positive challenges and the median age of the child at the time of challenge varied between foods tested. Younger children had an increased risk of positive OFC outcome. Peanut allergy was the most common food allergy diagnosed. Those children with positive food challenges had a significantly higher degree of allergic co-morbidity.

REFERENCES

ORAL FOOD CHALLENGES IN CHILDREN AT A TERTIARY ALLERGY CLINIC IN AFRICA: SIGNIFICANCE OF SPECIFIC IgE LEVELS DIFFERS FROM INTERNATIONAL STANDARDS AND VARIES WITH ETHNICITY

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INTRODUCTION: Sampson¹ determined 95% positive predictive values (95% PPV) for IgE levels by ImmunoCAP for food challenge outcome in children in a first world
country. These values are used widely in decision making processes regarding oral food challenges and in the diagnosis of symptomatic food hypersensitivity. Decision points as determined by Sampson include IgE to egg of 7 kU/L and 2 kU/L for children above and below 2 years of age respectively, IgE to cow’s milk of 15 kU/L and 5 kU/L for those above and below 2 years of age respectively and IgE to peanut above 14 kU/L. Predictive values for African children have not been determined. We aim to compare the applicability of international 95% positive predictive values for IgE levels in the African setting.

METHODS: This is a retrospective, descriptive study of children who presented to Red Cross Children’s Hospital’s tertiary Allergy clinic with food allergies and subsequently had open oral food challenges (OFC) over the 39 month period from February 2011 to April 2014.

RESULTS: Two hundred and two OFC were performed on 142 children between the ages of 9 months and 14 years. Egg, peanut and cow’s milk made up the largest number of challenges at 64, 37 and 25 respectively. 38 (18.8%) challenges had a positive outcome. The majority of challenges were done in children of mixed race (84.1%), with black African and white children accounting for 12.9% and 3% respectively. The proportion of positive food challenges differed for children of different ethnicity. Challenges had a positive outcome in 18.8% (n=32/170) of mixed race, 15.4% (n=4/26) of black African and 33.3% (n=2/6) of white children. Median age at challenge was 47 months for mixed race children, 42 months for black African and 117 months for white children. There was a significant difference in the median ages at challenge (p=0.007 Kruskal Wallis). Further analysis was not performed on white children as numbers are too small. IgE levels for each food and each challenge outcome were compared to the published 95% PPV’s. In challenges to egg, 36.1% (17/47) mixed race and 42.9% (3/7) black African had negative OFC’s with IgE above the 95% PPV. In cow’s milk challenges, 40.0% (6/15) mixed race and 80.0% (4/5) black African children had negative OFC’s with IgE above the 95% PPV (p=0.12). For peanut challenges, 21.7% (5/23) mixed race children had negative OFC outcomes with IgE above the 95% PPV. Only one black African with IgE above the 95% PPV was challenged to peanut, and was challenge positive.

CONCLUSION: In this setting, large numbers of patients have negative challenges despite IgE levels above the internationally derived 95% PPVs. A higher proportion of Black African children have negative egg and milk challenges despite IgE levels above the internationally derived 95% PPVs.

REFERENCES

ETHNIC DIFFERENCES IN PEANUT SENSITISATION AND PEANUT ALLERGY PATTERNS IN SOUTH AFRICAN CHILDREN WITH ATOPIC DERMATITIS

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BACKGROUND: Geographic and ethnic differences in peanut allergy prevalence may exist. There is little data on peanut allergy in South Africa, which has previously been thought to be low, particularly in Black Africans. This study compared peanut sensitisation patterns, true peanut allergy and peanut component patterns between South African children with atopic dermatitis (AD) of Black (Xhosa) origin and children of mixed race.

METHODS: 100 children (6 months to 10 years) with moderate to severe AD were randomly selected from a dermatology clinic at the Red Cross Children’s Hospital in Cape Town. They underwent food allergy screening by questionnaire, skin prick tests and allergen specific IgE was assessed with ISAC 103 component microarray testing. Those who were sensitised to peanut (n=44) had additional ImmunoCAP tests for components rArah 1,2,3,8 and 9. Patients with any uncertainty regarding clinical peanut allergy (n=25) underwent incremental open oral food challenges. Sensitisation was defined as SPT≥3 mm or ISAC>0.3 Units, and allergy as positive food challenge or convincing recent history of reaction with positive SPT/ specific IgE above the “traditional” 95% positive predictive values for peanut allergy (8 mm for SPT, 14 kU/L for specific IgE).

RESULTS: Overall, 44% of patients were peanut sensitised (50% mixed race and 41% Xhosa, p=0.1). Peanut allergy rates were high overall (24%), though significantly lower in the Xhosas (15%) compared with mixed race (38%, p=0.01), despite comparable baseline characteristics. Traditional 95% positive predictive values for SPT (≥8 mm), peanut specific IgE (≥14 kU/L) and ImmunoCAP rArah2 (≥0.35 kU/L) fared well in the mixed race group (88%, 90% and 93% respectively), but poorly in the Xhosa group (80%, 57% and 53%). Component tests had a similar pattern in both ethnic groups with Arah2 being
most strongly associated with peanut allergy in both ethnic groups. However, the likelihood of allergy with a positive rArah2 (≥0.35 kU/L) was significantly lower in Xhosa than mixed race patients (53% v 93%, p=0.01). Arah 8 and 9 were more commonly positive in tolerant patients in both ethnic groups with Arah9 having the strongest association with tolerance of any single component.

**CONCLUSION:** In Xhosa patients, sensitisation to peanut (including Arah2) is significantly less likely to equate to true allergy than in mixed race patients. Traditional 95% PPV for peanut allergy perform poorly in Xhosa patients. The component Arah2 is the most valuable for differentiating sensitisation from allergy in both ethnic groups; Arah9 is associated with asymptomatic sensitisation.

**TITLE:** IPEX (Immune Dysregulation, Polyendocrinopathy, Enteropathy, X-linked) Syndrome Masquerading as a Food Allergy – First Reported Case in South Africa

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**BACKGROUND:** IPEX (Immune dysregulation, Polyendocrinopathy, Enteropathy, X-linked) syndrome is extremely rare and characterised by T-regulatory cell dysfunction leading to unchecked allergy, autoimmunity, enteropathy, sepsis and endocrinopathies (typically diabetes). It is caused by mutations in the FOXP3 gene, leading to faulty Tregulatory cell differentiation. The outcome is uniformly poor without stem cell transplantation.

**CASE:** A firstborn Caucasian boy born at 32 weeks developed intractable diarrhoea after introduction of feeds despite trials of breast milk and extensively hydrolysed milk. He tolerated small amounts of amino acid formula but became chiefly dependent on TPN during the first few weeks of life. He developed an eczematous rash and later also hypopigmented patches. He had several episodes of unexplained septicemia. Gut biopsy showed non-specific lymphocytic and eosinophilic infiltrates, prompting referral to an allergist at 4 months age. Full immune assessment showed that his IgG, A and M were within normal range, but his total IgE was extreme at > 5000 with high specific IgE >60kU/L to cow’s milk. Complement screening tests were normal. T cell immunophenotyping showed generally reduced T cell subsets (reduced CD4, CD8 and CD45) but normal B cell levels. Autoimmunity was evidenced by positive anti-acinar cell antibodies (with normal glucose), anti-goblet cell, anti-platelet and anti-erythrocyte antibodies, persistent lymphopaenia, mild hepatitis and nephritis. On the basis of the autoimmune picture, he was commenced on IV corticosteroids with rapid and excellent response. FOXP3 gene analysis showed a known missense mutation, confirming IPEX syndrome. He received 3 doses Rituximab to effect B cell depletion, and was maintained on tacrolimus and low dose oral corticosteroids. He did very well with home care on amino acid formula and monthly immunoglobulin infusions to confer passive immunity against infections. At 10 months of age he received a matched allogenic stem cell transplant. He is now 2 months post-transplant, and stable.

**CONCLUSION:** IPEX syndrome is rare but should be considered in young males when allergies and autoimmunity co-exist. Definitive treatment with stem cell transplant should be performed before end organ damage has occurred. This syndrome demonstrates the close interaction between allergic and immunological dysfunction.

**IL-17 ENHANCES B CELL RECRUITMENT TO THE BRONCHIAL TISSUE OF ASTHMATIC PATIENTS VIA THE INDUCTION OF CXCL-13 PRODUCTION**

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**BACKGROUND:** Asthma is a chronic inflammatory disorder of the lung airways that is associated with airway remodelling and hyper-responsiveness (AHR). IgE plays
an important role in triggering inflammatory responses responsible for asthma symptoms and pathogenesis. IgE levels increases in asthmatic patients both systematically and in lung tissues. However, the source behind this increase in IgE is still debatable. B cells play an important role in asthma development mostly via the production of IgE. In this proposal, we hypothesised that IgE is increased in lung tissue of asthmatic patients due to increased infiltration of B cells to this tissue. We have recently reported elevated expression of IL-17 in severe asthma. So we suggested that IL-17 is involved in the migration of B cells to the mucosal surface of the airways.

METHODS: We determined the number and pattern of infiltrated B cells into lung tissues of asthmatic compared to healthy subjects. Bronchial biopsies from asthmatic versus healthy subjects were stained for B cells marker (CD20) using Immunohistochemistry. Structural cells such as endothelial cells, fibroblasts, and ASM cells were stimulated with IL-17 and levels of CXCL-13 were determined using RT-PCR and flow cytometry. Migration of B cells towards supernatant of IL-17 stimulated structural cells was determined using Boyden Chamber migration assay in the presence or absence of anti-CXCL-13. Mechanisms of IL-17 induced B cell migration were tested using MAP kinase inhibitors to determine pathways involved in IL-17 induced CXCL-13 production.

RESULTS: The number of CD20 positive cells in asthmatic biopsies was significantly higher than those in healthy subjects. Interestingly, we have also observed an increase in lymph follicle numbers in asthmatic airways compared to healthy subjects although this increase did not reach significance. Most of the lymph follicles were B cells follicles (CD20 positive cells) and were formed close to the epithelial layer. IL-17 as well as CXCL-13 were upregulated in these bronchial tissues as shown using immunohistochemistry. Stimulation of endothelial, fibroblasts, but not ASM cells with IL-17 enhanced their production of CXCL-13. B cells were shown to migrate towards supernatants of structural cells stimulated with IL-17 cytokines containing CXCL-13. This migration was inhibited upon neutralizing of CXCL-13. Blocking IL-17 signalling using MAP kinase inhibitors prevented CXCL-13 production and in vitro migration of B cell.

CONCLUSION: These results indicated that IL-17 might drive the migration of B cells in the lung tissues of asthmatic patients by enhancing the production of CXCL-13 in local structural and/or inflammatory cells.

CASE REPORT: A MANAGEMENT QUANDARY FOR A PROFILIN-ALLERGIC PATIENT

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INTRODUCTION: Profilin, present in the cytoplasm of nucleated cells, is an allergen in pollens, latex and plant food. Profilins commonly cause the Oral Allergy Syndrome and are not usually responsible for serious symptoms, although such examples have been reported. We describe a case where even being in close proximity to a profilin has resulted in the patient requiring adrenaline. The selection of a safe treatment plan has been challenging.

METHOD: Case report - Mrs NA, 39 years old, has a long history of grass allergies, hay fever, allergic conjunctivitis, drug allergies to codeine and morphine, latex allergy and asthma. A bee sting resulted in localised angioedema and dyspnoea. At 31 she developed severe food allergies to various foods: watermelon, peaches, strawberries, mangoes, olives, wheat, white bread, pasta. Although her symptoms were primarily gastrointestinal in nature, she also experienced itchy mouth and eyes, wheezing and dyspnoea, and even significant hypotension after ingesting one of the implicated foods. She has also had several incidents, mainly with watermelon, where simply walking past the fruit triggered a multi-organ adverse reaction. The symptoms were identical to those occurring on ingestion of the food, and required adrenaline.

RESULTS: Component resolved testing (ISAC): Birch profilin 1.3 ISU, Timothy Grass profilin 0.8 ISU, annual mercury profilin 2.5 ISU, latex profilin component 2.7 ISU. Prick-to-prick tests (melon, mango, strawberry, avocado, peach) resulted in puffy eyes, itchy skin and a significant blood pressure drop (140/90 to 125/80) requiring phenergan and adrenaline. We deduced from this patient’s test results, together with her clinical picture, that there is cross-reactivity to the profilin component in Bermuda grass (Cyn d 12), Timothy grass, (rhi p 12), birch pollen (Bet v 2), mango (Man i 13), melon (Cuc m 2), watermelon (Cit la 2), rape seed (bra n 8), peaches (pru p 4), strawberry (Fra a 4), wheat (Tri a 12), olives (Ole e 2) and latex (Hev b 8) (2,3). A few weeks after starting sublingual immunotherapy (SLIT) for Timothy and Bermuda Grasses (Stalorol), 3 hours post SLIT, she experienced abdominal cramps, dyspnoea and stridor requiring adrenaline.
CONCLUSION: The selection of a safe treatment plan is challenging. Avoidance would significantly reduce her quality of life. Exposure to a dilute dose of the lowest SLIT build-up phase resulted in adrenalin and a hospital admission. Our next option is subcutaneous immunotherapy (SCIT). The safety profile of SCIT was questioned in the past, however it appears to be as safe as SLIT. The predominant side effects described for SLIT are oral or gastrointestinal irritations (her main symptoms) and perhaps by using SCIT these adverse reactions could be reduced. This management plan has not been previously described. Omalizumab is also a consideration although its cost is a limiting factor.

REFERENCES

BLOMIA TROPICALIS AND ITS SIGNIFICANCE AS AN ALLERGEN IN THE JOHANNESBURG VS KWAZULU-NATAL NORTH COAST REGIONS; A PILOT STUDY

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INTRODUCTION: Asthma and allergic rhinitis are noted to be a major contributor to the burden of disease amongst South African children. Aero-allergens are implicated in the pathogenesis of both these disease processes. In South Africa, house dust mite has been quoted as the most significant aero-allergen. The three house dust mite species involved include Dermatophagoides pteronyssinus, Dermatophagoides farinae and Blomia tropicalis. Conventional skin pick testing tests only for D. pteronyssinus and D. farinae sensitivity and not Blomia tropicalis sensitivity. Blomia tropicalis has classically only been described of significance in the tropical and subtropical regions of the world. It is now coming to light that Blomia tropicalis plays an important role outside the tropical belt. In South Africa specifically, Blomia tropicalis has been described as significant in the Western Cape.

METHODOLOGY: Skin prick tests (to conventional aero-allergens and including HDM mix [D. pteronyssinus and D. farinae] and Blomia tropicalis was conducted on 85 (50 in KwaZulu-Natal and 35 in Gauteng) atopic subjects presenting to the authors private practice in Ballito, northern KwaZulu-Natal and Alberton, Johannesburg. Sensitisation was determined if the SPT was 3 mm or greater than the negative control. The study was conducted between October 2013 and February 2014.

RESULTS: 52% of subjects in Ballito and 3% of subjects in Alberton were sensitised to Blomia tropicalis. There was 38% and 23% sensitisation to the HDM mix in Ballito and Alberton respectively.

CONCLUSION: This study investigates the importance of Blomia tropicalis allergy in two different regions of South Africa, namely Johannesburg and Ballito (Northern KwaZulu Natal). Results of this study indicate that house dust mite allergy is more prevalent along the Natal coastline and that Blomia tropicalis specifically is a significant allergen in the northern KwaZulu-Natal region. It is imperative that the physician undertakes allergy testing based on local prevalence patterns. Allergy testing in the Ballito area should be broadened to include Blomia tropicalis.

PRIMARY HEALTH CARE MANAGEMENT OF CHILDHOOD ATOPIC ECZEMA

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INTRODUCTION: Allergies place a high burden on health services worldwide. The focus of this research was on the management of childhood atopic eczema on the primary health care (PHC) level in the public system of a district in Gauteng. The research question was: How can the PHC clinician, as part of a multi-disciplinary team, effectively manage children with atopic eczema?

METHOD: A qualitative, contextual, explorative and descriptive research design, with an embedded single case study method was used. The research was conducted in three phases.

Phase one: The single case was the public health service of a district of Gauteng and embedded units were: parents of children 0-12 years with atopic eczema; dermatologists and paediatricians of the paediatric dermatology outpatient
Background: Allergic rhinitis is defined as an inflammatory disease of the nose and the paranasal sinuses characterised by a specific IgE-mediated hypersensitivity reaction. Treatment is usually with antihistamines and intranasal steroids. Although several oxidants and antioxidants are likely to be involved, alterations in only limited parameters have been studied.

Methods: Blood was obtained from allergic rhinitis patients and symptoms were scored and recorded. The patients were classified as perennial allergic rhinitis (PAR) if they had at least two rhinitis symptoms. A control group was also included. Erythrocyte lipid peroxidation, erythrocyte catalase, glutathione and glutathione reductase remained unchanged from normal subjects.

Results: Total antioxidant activity was significantly lower in chronic allergic rhinitis patients when compared to controls. Plasma glutathione serum transferase and erythrocyte catalase, glutathione and glutathione reductase remained unchanged from normal subjects.

Conclusion: The changes in different parameters indicate an imbalance in the oxidant and antioxidant status in chronic allergic rhinitis patients. Further studies required to investigate the potential for antioxidant supplements to be used as routine therapy in chronic allergic rhinitis patients. A strategy for designing well-balanced antioxidant therapies based on both reducing endogenous reactive oxygen species production and increasing the total antioxidant capacity of human cells may prove useful in the prevention of allergic rhinitis.

Screening for Hypothalamic-Pituitary-Adrenal Axis Suppression (HPAS) in Asthmatic Children is not Possible When Employing Clinical and Biochemical Parameters

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BACKGROUND: It is impractical to test asthmatic children for HPAS with dynamic adrenal function tests. 
Objective: To determine which parameter is the most useful screening test for Hypothalamic-pituitary-adrenal axis suppression (HPAS).

METHODS: 143 asthmatic children were recruited. Height velocity (HV), weight velocity (WV), height standard deviation score (SDS), weight SDS, change in systolic blood pressure from supine to standing were recorded. Early morning urinary free cortisol (UFC), morning serum cortisol (C), adrenocorticotropin hormone (ACTH) and dehydroepiandrosterone sulphate (DHEAS) were collected. UFC was expressed as a ratio of Cr excretion and as a ratio of body surface area. A metyrapone (MTP) test was performed if the 08:00 hr C was >83nmol/l. Spearman correlation coefficients (r) were calculated between the post-MTP (PMTP) ACTH, 11-deoxycortisol (11DOC), 11DOC+C, and each variable. Diagnostic statistics were calculated.

RESULTS: All screening variables were weakly correlated with the three PMTP outcomes. Only DHEAS and UFC (nmol/m²) were statistically significant – DHEAS for PMTP ACTH and 11DOC (r = 0.20, p 0.025 & r = 0.21, p 0.017); UFC (nmol/m²) for PMTP 11DOC and 11DOC+C (r=0.19, p 0.033 & r = 0.20, p 0.022). The area under ROC curve for DHEAS in the 5-9 year age group was 0.69 (CI: 0.47-0.92). At DHEAS cut-off of 0.2 µmol/l: sensitivity = 0.88, specificity = 0.61, positive predictive value = 0.37, negative predictive value = 0.95, accuracy = 0.67, positive likelihood ratio = 2.26, negative likelihood ratio = 0.20.

CONCLUSION: No parameter is useful as a universal screening test. DHEAS may be suitable to exclude HPAS before adrenarche.

ANGIOEDEMA OF THE HANDS AND FEET IN INFANTS UNDER THE AGE OF 6 MONTHS: AN ATYPICAL PRESENTATION OF COW MILK ALLERGY

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BACKGROUND: Cow’s milk allergy (CMA) results from an immunological reaction to one or more milk proteins. The prevalence being between 2.5 to 7% and higher in children than in adults. It usually presents with mild urticaria, gastro intestinal symptoms, rhinitis, eczema or severe and potentially life-threatening anaphylaxis. The reactions which occur in less than 2 hours are urticaria, angioedema, and acute flare up of atopic eczema.

METHOD: We present 3 infants below the age of 6 months who all presented with isolated angioedema of the hands and feet after first exposure to cow’s milk protein. Patient 1 was a 4 month old infant who was exclusively breastfed. On introduction of a formula feed developed angioedema on the face within the first 2 hours. This subsequently resolved and after 48 hours was brought to the hospital with swollen hands and feet. Patient 2 was a 1 month old who presented with swelling of the hands and feet and no other skin lesions prior to that. On evaluating the history it was found that 6 days previously he was commenced on a formula feed containing cow milk protein. Patient 3, age 2 months, was exclusively breastfed and presented with swelling of the hands and feet within 7 days of the initial exposure of a formula feed containing cow’s milk protein.

RESULTS/CONCLUSION: Immunocap RAST for cow’s milk and β lactoboglobin was elevated in all 3 patients. They all responded rapidly to elimination of cow’s milk, with no recurrence of the oedema of hands and feet.