foods including potatoes, bananas and vegetables all tested positive in 4% of the children. Pumpkin tested positive in one infant who had presented with rectal bleeding. Majority of the children had positive tests to multiple foods. Only 14% of the children had negative tests. The commonest gastrointestinal (GI) symptoms were abdominal pain (38%), constipation (36%), vomiting (14%), diarrhoea (11%), failure to thrive (9%) and colics (3%). Majority of the children had multiple GI symptoms. Eczema and cough were associated symptoms in 9% and 3% of the children respectively.

Conclusions: The prevalence of food allergy as suggested by this study is high in Kenyan children and contributes significantly towards gastrointestinal morbidity. While cow milk, egg and beef are the commonest allergens, the emerging allergy to local infant complementary foods is also significant. The high frequency of multiple allergens partly contributed to poor compliance in the exclusion rechallenge programme due to lack of options on alternative foods.

442 Coincidence of Celiac Disease and Gluten Allergy
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Background: The type I or IV of hypersensitivity reactions according to Gell and Coombs classification may be responsible for clinical symptoms observed after ingestion of gluten - containing products. The mechanisms of these reactions are either IgE-dependent or IgE-independent. Celiac disease based on IgE-independent mechanism is classified as gluten hypersensitivity. Clinical manifestation of celiac disease and gluten allergy is often similar. Correct diagnosis of this disease is particularly important due to the different long-term therapeutic procedures. We would like to assess of the incidence of celiac disease in children with gluten allergy.

Methods: The study involved 50 children with abdominal pain, chronic diarrhea, recurrent respiratory and ears inflammation and skin lesions - patients of the Immunological and Gastroenterology Outpatient Clinic of Institute of Mother and Child. The allergy to gluten was confirmed on the basis of positive peripheral blood lymphocytes blast transformation test and detection of allergen-specific IgE antibodies to gluten (f79). In all children plasma concentration of immunoglobulin classes A, G M and IgA or IgG antibodies against tissue transglutaminase (tTGA) were measured.

Results: In children on the study group the type IV of hypersensitivity reaction to gluten was diagnosed. In 3 children specific IgE antibodies to gluten were also confirmed (f79 - 1 type hypersensitivity). Anti-tissue transglutaminase antibodies both IgA and IgG were detected in 2 children in whom the concentration of IgA and IgG in serum remained within normal range for age. In these children celiac disease was confirmed by jejunal biopsy.

Conclusions:
1. The predominant frequency of type IV of hypersensitivity reactions in children in response to the gluten antigen should be taken into account in diagnosis of food allergy.
2. In children diagnosed with gluten allergy the test for celiac disease should be performed.

443 Immunoreactivity of β-Lactoglobulin and Identification of the Peptides Generated after Simulated Orogastrointestinal Digestion
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Background: The aim of the study was to evaluate the allergenicity of one of the main allergens from cow milk, β-lactoglobulin (β-Lg) after being digested through a simulated orogastrointestinal digestion and to identify those peptides generated during the digestion process.

Methods: The digestion was performed in 3 steps by using simulated oral, gastric and duodenal fluids. Digestibility of β-Lg was assessed by SDS-PAGE and RP-HPLC. IgE binding of native β-Lg and hydrolysates was evaluated by indirect ELISA, using the sera from 6 milk-allergic patients. The peptides produced during the orogastrointestinal digestion, were identified by liquid chromatography tandem mass spectrometry analysis.

Results: Results showed that β-Lg was progressively degraded during the digestion. Intact β-Lg was observed after the gastric phase and in the first stages of the duodenal digestion. However, no residual β-Lg was observed at the end of the duodenal phase. Immunoassays showed that during the in vitro gastric and duodenal digestion immunoreactivity decreased progressively with an EC50 value increased 150 times at the end of the digestion. Among the products of digestion, 146 peptides were identified. No peptides were found in the oral phase. Forty five peptides were detected in the gastric phase, 71 in the duodenal, and 30 were common in both phases. Between those identified peptides, 4 of them with the sequences LIVQTQMK, GLDlDQK, IDA1NENK, and VLVLTDYK had been previously described as epitopes of β-Lg.

Conclusions: β-Lg is progressively degraded during the digestion process. Similarly, β-Lg allergenicity is reduced through the simulated digestion with a severe reduction at the end of the duodenal stage. From the digestion products, 147 peptides have been identified. Studies are underway to evaluate the ability to cross the intestinal barrier and to bind to human-IgE of the most relevant identified peptides.

HEALTH OUTCOMES FOR ASTHMA

444 Associations between Self-reported Adherence to Asthma Anti-inflammatory Therapy and Risk Factors for Non-adherence (NA) in Pediatric Patients
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Background: Identifying patient adherence status and reasons for non-adherence are important components of asthma management. GINA 2008 Guidelines have identified risk-factors associated with poor adherence.

Methods: Three hundred sixty one parents of children with intermittent and persistent asthma (59.6% male; 64.1% Caucasian; mean age 8.07 years) completed the AsthmaPACT, a 96-item asthma survey hosted by the Asthma and Allergy Foundation of America website. The AsthmaPACT identifies risk-factors for not following treatment recommendations as well as medication use. Asthma surveys were completed from August 2009 thru June 2011.

Results: Descriptive statistics indicated that 259 of the sample reported giving their child one or more of the anti-inflammatory medication prescribed. Of these, 69 (27%) were diagnosed as NA, operationalized as whether a parent reported giving the child anti-inflammatory medication “less than prescribed by their physician.” During the 4 weeks prior to completing the survey, 43.0% were having symptoms daily and 39.4% were using albuterol MDI daily. In this cross-sectional data set, items intended to relate risk factors to NA were examined using chi square (χ²). Parents who claimed that their child receive less anti-inflammatory medication than prescribed, were more likely to report: 1) symptoms from emotional states: crying χ²(df = 2) = 8.643 P = 0.013; frustration χ²(df = 2) = 6.202 P = 0.045; anger χ²(df = 2) = 11.029 P = 0.0042; Parent more likely to see child as anxious or a worrier χ²(df = 2) = 6.527 P = 0.038; 2) Child’s Quality of Life (QoL); is more likely to be effected at school χ²(df = 2) = 12.963 P = 0.002; and interfere with family activities χ².

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A total of 115 questionnaires were applied, only 99 were properly filled. Several studies have demonstrated that a significant percentage of medical students are deficient in both knowledge and skill regarding the inhalers. But no data is available about the assessment of inhaler technique and knowledge among medical students in Korea. The aim of this study was to evaluate the proficiency and knowledge of medical students in proper use of 3 kinds of inhalers (metered dose inhaler, turbuhaler, and diskus).

Methods: We enrolled 40 third-year medical students who are on hospital training course. The participants received 25 to 35 minutes of instruction from a trained nurse educator for asthma. Three month later, we assessed their knowledge and skill regarding inhaler use. They were asked to discriminate each type of 3 devices and to demonstrate the use of each device using placebo inhalers. Also, they were asked about the prevention and management for local adverse reaction induced by inhaled corticosteroids (ICS). Participants’s inhaler skill was assessed into 3 levels as good, inadequate, and poor for each device type.

Results: Only 12.5% (5/40) of medical students could explain the merits of inhalation therapy compared to oral route. 67.5% (27/40) of participants could not discriminate all types of inhaler devices. With regards to prevention and treatment option for ICS-related local side effects, only 22.5% (9/40) answered correctly. Subjects with good performance grade were found in 12.5% for metered dose inhaler, 40.0% for turbuhaler, and 57.5% for diskus.

Conclusions: We conclude that large percent of medical students were deficient in knowledge and proficiency regarding the inhalers. A brief educational session with demonstration by trained asthma nurse was not effective in enhancing inhaler technique or increasing knowledge on inhaler treatment.

Methods: A descriptive, applied, prospective, longitudinal and evaluation study was conducted with the participation of 160 children, with ages ranging from 9 to 12 years and 320 children aged 13 to 14 years from 4 different schools. Two subgroups for each age were established with a similar number of members. A subgroup with 80 students and another with 160 students were headed by 2 teachers instructed in handling students with asthma while the 2 remaining subgroups were headed by 2 teachers who did not have any knowledge about asthma. The following aspects were assessed: prevalence and severity of asthma, exercise-induced asthma, physical fitness and maximum expiratory flow at the beginning of the study and 6 months later.

Results: An 18.5% prevalence of asthma was observed among the 480 students; 28.1% in children from 9 to 12 years and 13.7% from 13 to 14 years. In the group of asthmatic children from 9 to 12 years, significant differences were observed in favor of asthmatic students whose teacher had received instruction with regards to: decreasing the severity of asthma (P = 0.000), lower incidence of exercise-induced asthma (P = 0.0001), increase in the results of physical fitness tests (P = 0.009). In the group of asthmatic children from 13 to 14 years old, statistically significant differences were also reported in favor of students whose teachers had received training with the following results: drop in exercise-induced asthma (P = 0.000116), higher values in the physical fitness tests of all students (P = 0.00000) and also in students with asthma (P = 0.009436). At the end of the study, both groups exhibited a significant increase in the maximum expiratory flow measurements of students in the group aged 9 to 12 years (P = 0.000) and in the group aged 13 to 14 years old (P = 0.001).

Conclusions: Teachers with knowledge about asthma had a positive impact on physical fitness and lowered exercise-induced asthma in students.