

Conclusions Blood eosinophils and IgE levels may be regarded more as global predictors but FEV1 and FeNO may be considered more accurate predictors in risk assessment of future adverse events.

670 EXHALED NITRIC OXIDE AS A PREDICTOR FOR EXACERBATION IN CHILDHOOD ASTHMA - IS IT USEFUL?

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Aims Currently, the asthma control is based on symptoms and lung function indices. The inflammatory markers like exhaled nitric oxide (FeNO) may provide additional data for asthma management. We aimed to correlate the FeNO levels with asthma exacerbations in children admitted to our pediatric department.

Methods 104 children (57 boys), aged 5 to 11, were enrolled to our 12 month survey. The monthly follow up visits comprised in clinical exam, childhood asthma control test (C-ACT), spirometry and FeNO measurement (NioxMino, Sweden). The analysis was done using the chi squared test.

Results 68 children experienced a total of 114 exacerbations during the survey. Only 23 exacerbations were associated with positive FeNO values (over 25 ppb), compared to 67 C-ACT positive: $p=0.000$; OR=0.17 (0.09–0.31); 44 spirometry positive: $p=0.001$; OR=0.40 (0.22–0.72) and 34 clinical positive findings: $p=0.04$; OR=0.59 (0.32–1.09). 21 of the positive FeNO cases (91%) had high values (over 50 ppb). On the other hand, 87 cases showed an increase in FeNO measurements without clinical exacerbation.

Conclusions Exhaled nitric oxide poorly correlates with asthma exacerbations, compared to “classical tools”. High values may be useful as a predictor, but the sensitivity and specificity are still uncertain.

671 EXHALED NITRIC OXIDE AND PULMONARY FUNCTION IN CHILDREN WITH ALLERGIC ASTHMA

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Background and Aims Nitric oxide (NO) is a marker of eosinophilic inflammation in airways and can be measured in exhaled air. Fractional exhaled nitric oxide (FeNO) is elevated in allergic asthma. Children with asthma and normal spirometry (FEV1%) can have an inflammation of airways. Inhaled steroid therapy decreases FeNO levels. The aims of this study is to analyze the values of FeNO and FEV1% in children with allergic asthma (steroid naïve and undertaking inhaled steroid therapy).

Methods Thirty steroid naïve children with asthma, aged 5–15 years (<10 years $n=20$, >10 years $n=10$) and thirty children with asthma, undertaking inhaled steroid therapy longer than 1 month, aged 5–15 years (<10 years 18, >10 years 12), were included. Recent respiratory infections were negative in all groups. On line technique was performed in measuring FeNO using a cheiloluminescent analyser Niox, Aerocrine-Sweden, according to ERS/ATS recommendations. Spirometry was performed by standardized procedure.

Results FeNO levels were significantly higher (Kruskal-Wallis test) in steroid naïve group ($C=47.45$) vs undertaking therapy group ($C=11.15$). Significant difference between these groups (Mann-Whitney test) was confirmed ($Z=6.56$; $p=0.0001$). 98% children in steroid naïve group had normal spirometry (FEV1%>80%). Significant difference in FEV1% (Mann-Whitney test), between steroid naïve and undertaking therapy group, was found ($Z=-3.86$; $p=0.0001$).

Conclusions Steroid naïve children with asthma had significant higher values of FeNO vs children undertaking inhaled steroid

therapy. Significant difference in FEV1% was found in these two groups. In our study, steroid naïve children with asthma and normal FEV1% had eosinophilic inflammation in airways.

672 FENO AND ASTHMA CONTROL

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Background and Aims Asthma is a chronic inflammatory disease of the lower airways, whose treatment is conducted by guidelines in use, depending on clinical markers of disease control (ACT=asthma control test score) and spirometric values. Due to situations in which there is discrepancy between the two categories of parameters, we aimed this study to examine whether FENO measurement may be an additional argument in guiding the treatment.

Method The prospective study lasted five months and included 30 patients diagnosed as moderate persistent asthma, aged 5–17 years, nonsmokers; ACT score, FEV1 and FENO were assessed.

Results 12 patients had ACT> 19, normal FEV1 values and FENO < 20ppb.

18 patients had ACT < 19; 9 of them had normal FEV1 values and 16 had FENO values> 32ppb.

Conclusion FENO value correlates better than FEV1 with clinical asthma control score, so it can be an additional marker in therapeutic decision.

673 PRE AND POST BRONCHODILATOR AIRWAY RESISTANCE VALUES IN CHILDREN WITH ASTHMA USING AIRFLOW PERTURBATION DEVICE (APD)

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Background Asthma is the most common chronic disease of childhood and pulmonary function testing plays an important role in assessment and management of children with asthma. Pre and post bronchodilator spirometry test is the most common pulmonary function measurement that is utilized in the diagnosis of asthma.

Methods Respiratory resistance using APD was measured prior and 20 minutes after Albuterol in children with asthma who presented to the Pediatric Pulmonary Clinic at GUH.

Results A total of 30 children with asthma (mean age: 10.6; range: 5.6–17) including 14 female and 16 male participated in the study. The respiratory resistance values by APD ranged from 3.34–8.22 CmH₂O/L/S (mean 5.27) for pre bronchodilator treatment and 2.37–6.95 (mean 4.33) for post treatment. All 30 children showed decrease in respiratory resistance as measured by APD after bronchodilator therapy. The highest value of resistance was 8.22 which was seen in the youngest child (5.6 yo) and the lowest resistance was 3.34 which was seen in an older child (16 yo). These results are consistent with the findings that airway resistance decreases after bronchodilator therapy in patients with asthma. It has been developed to measure airway resistance noninvasively and without need of extensive coordination. The APD is a simple and portable device that can be used easily by patients of all ages.

Conclusions APD is a simple, convenient, effortless, and easy to use device that may be used as a valuable tool in evaluation of children with asthma.

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674 PULMONARY FUNCTION AND NUTRITIONAL STATUS OF CHILDREN EXPOSED TO SMALL SCALE AGATE INDUSTRIAL UNITS IN SHAKARPUR, GUJARAT - INDIA

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Background In Shakarpur of Khambhat, a coastal city of Gujarat, India, several small agate polishing units operate from individual houses. Prevalence of Silicosis and other co-morbid conditions is systematically documented recently. Effect of environmental exposure on nutritional status and pulmonary function (PFTs) of children in this area was assessed.

Methods Cross sectional study was conducted in schools of this area. Weight was measured using standard digital bathroom scale while height was measured using Stadiometer (Seca). PFTs were measured for Forced Vital Capacity (FVC) and Forced Expiratory Volume in 1st second (FEV1) using digital spirometer (One Flow FVC memo kit). Out of School children were not assessed.

Results 240 children (128 Boys and 112 Girls) in the age group of 10–16 years participated. 5 children (2 boys and 3 girls below 15 years of age) were working in agate industry. As per WHO growth standards 56.3% boys and 45.5% girls were stunted whereas 47.7% boys and 36.6% girls were undernourished. (Body Mass Index less than -2SD). The mean (SD) FVC [1.82(0.64) for boys vs. 1.83(0.63) for girls] and mean (SD) FEV1 [1.26(0.33) for boys vs. 1.29(0.34) for girls] was comparable across gender. No statistically significant difference was found in PFTs of children exposed to in house or neighboring agate industry as compared to unexposed children.

Conclusion PFTs are decreased in the entire population of children as compared to standards in Gujarat Population but agate exposed children did not show worse PFTs. Prevalence of under-nutrition in children was high.

675 MALNOURISHED CHILDREN WITH ACUTE DIARRHEA

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Introduction Diarrhoea continues to be a serious problem in children and may be fatal when superimposed upon malnutrition.

Objective To determine the frequency of electrolyte disturbances in malnourished children with diarrhea and whether these findings have therapeutic value or not.

Methodology We included in the study 400 children age 6 months to 5 years admitted for acute watery diarrhea. On the basis of history, physical examination and anthropometrics measurement they were divided into Group A patients (n=116) who were malnourished and Group B patients (n=284) with normal nutrition. Serum electrolytes were done in patients of both groups and the results were analyzed statistically.

Results Analysis of serum electrolytes in both groups revealed that hypokalemia, hyponatremia and low serum bicarbonate were seen more frequently in patients of group A as compared to group B. In group A hypokalemia was seen in 39 patients (39/116 or 33.62%) while it was observed in 42 patients (42/284 or 14.78%) in group B (p<0.001). Hyponatremia was seen in 21 patients (21/116 or 18.10%) in group A and in 14 patients (14/284 or 4.92%) in group B (p<0.001). In group A 96 patients (96/116 or 82.7%) had low serum bicarbonate while in group B 122 patients (122/284 or 42.95%) had low serum bicarbonate value (p<0.001).

Conclusion Electrolyte disturbances were commonly seen in malnourished children with acute diarrhea. The measurement of serum electrolytes is helpful for immediate therapy to avoid serious life

threatening situation. Key words: Acute diarrhea, malnutrition, electrolytes.

676 CONGENITAL CHLORIDE DIARRHEA: A REVIEW OF 12 ARAB CHILDREN

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Background Congenital chloride diarrhea (CCD), a rare autosomal recessive disorder, is characterized by sustained watery diarrhea (due to defect of active Chloride/HCO₃ exchange in the ileum and colon) with high fecal chloride. The estimated incidence of CCD was 1 in 14000 in Kuwait reported in 1989. Aim of our study was to spotlight the common presentation of infants with CCD which appears not to be uncommon disorder in Kuwait for early management and prevention of complications.

Subjects and methods Reviewing the inpatient database of Pediatric department of Al-Adan Hospital, Kuwait for patients who were admitted as chronic diarrhea in the first year of life, 12 patients diagnosed as CCD (7 females and 5 males). The diagnosis of CCD was based on antenatal and early infantile presentation and confirmed by laboratory finding of excess chloride loss in stool and low serum chloride level.

Results All 12 patients were born to consanguineous parents, had antenatal history of IUGR, polyhydramnios and distended hypoechoic fetal bowel and presented with abdominal distension, hypotonia and muscle wasting. Whereas, 10 patients (90%) were delivered prematurely, 8 patients (66.6%) had maternal hypertension, 9 patients (75%) had absence of normal meconium at birth. Our patients showed significant decrease in serum sodium, potassium, chloride & urine chloride compared with the average for age.

Conclusions High index of suspicion and awareness should be considered for early diagnosis of CCD in this population especially in the presence of consanguineous marriage.

677 ELASTOGRAPHIC ASSESSMENT OF LIVER FIBROSIS IN CHILDREN WITH MALIGNANCIES VERSUS CHILDREN WITH HEPATIC STEATOSIS AND OTHER CHRONIC LIVER DISEASES

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The ultrasound elastography has more and more clinical applications, providing information related to the elasticity/stiffness of the examined-tissue. The aim of this paper was to assess the elastography performance for real-time ARFI in evaluating the liver fibrosis in children with malignancies, after-chemotherapy, compared with chronic liver diseases.

Material and Methods A prospective study was performed in Pediatric Clinic Ist Tg.-Mures, Romania, 2010, September 15th-2011, September 15th, on 153 hospitalized children - 58 children with malignancies, 28 with liver diseases, 20 obese children and a control-group - 47 children. The liver tissue elasticity has been evaluated (Shear Wave Velocity, SWV) as well as some paraclinical parameters; statistical correlations were established.

Results and discussion Comparing the values of transaminasis, statistically significant differences were found between children with liver diseases and control-group regarding aspartate-aminotransferase, AST and alanine-aminotransferase, ALT.SWV was measured globally and separately for the liver-segments 1 and 8. In normal conditions in the 1st-segment SWV values were smaller than in 8th-segment (p=0.02). In the group of obese children the SWV values were statistically significant bigger than in controls, the liver