Nutritional assessment and nutritional rehabilitation in children with bronchiectasis and childhood interstitial lung diseases (ChILD): effects on pulmonary functions and clinical severity

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Background: Nutrition is recognized as modifiable contributors to bronchiectasis and interstitial lung diseases (ChILD) development and progression. Nutritional interventions harness great potential in reducing respiratory illness related morbidity and mortality in the developing world. Aim of the study: This study was done to assess nutritional state of children with bronchiectasis and interstitial lung diseases and to study the effect of nutritional intervention program on their growth, pulmonary functions & on clinical severity of lung disease.

Methods: This is a case control, clinical interventional study included 17 patients with bronchiectasis &13 patients with interstitial lung diseases and 40 healthy children served as controls. Nutritional intervention program for 9 months was done, malnourished patients were given 150% of energy requirements for same- age healthy children and adolescents by addition of high caloric supplements 1.5 Kcal/ml to well-balanced diet (50% CHO & 20% Protein & 30% fats). Nutritional assessment by Subjective Global Nutritional Assessment, Nutritional dietary history obtained by 24 hours recall, complete anthropometric measurements including weight, height, BMI, and mid arm circumference, body composition using bioelectric impedance analysis, and spirometric pulmonary function testing were done to all patients pre and post nutritional intervention.

Results: 56.67% of studied patients were moderately malnourished and 23.33% were severely malnourished. 66.7% of studied patients were underweight and 50% of patients had stunted growth. All anthropometric indices WAZ, HAZ, BMIZ, z-TSF and z-MUAC of studied patients were significantly lower than control (P-value < 0.001). Patients had lower body fat % compared to same- age healthy children by addition of high caloric supplements 1.5 Kcal/ml to well-balanced diet (50% CHO & 20% Protein & 30% fats). Nutritional rehabilitation significantly improved patient anthropometry, body composition and respiratory symptoms. It also decreased SABA use, number of days of school absence, acute exacerbation attacks and hospitalization. However no significant changes in spirometric pulmonary function tests (FEV1%, FVC%, FEV1/FVC and MEF %) (P-value > 0.05).

Conclusion: Patients with bronchiectasis and interstitial lung diseases (ChILD) showed signs of malnutrition and body composition changes that improved significantly after nutritional intervention program for 9 months with significant improvement in frequency of acute exacerbations and hospitalization.

Bone remodeling in beta thalassemia patients, does it differ between Thalassemia major and intermedia?

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Background: The management of patients with thalassemia has improved markedly over the past few decades with the use of optimized transfusion programs and chelating therapy. With prolongation in life expectancy, it has been observed that this hemoglobinopathy is associated with a variety of bone disorders like deformities, bone pains, growth failure, pathologic fractures, osteopenia, and osteoporosis. High-dose iron chelating therapy may also contribute to osteopenia and osteoporosis. Osteoporosis is a significant cause of morbidity in these patients. It is characterized by low bone mass and disruption of bone architecture, resulting in reduced bone strength and increased risk of fractures. The amino-terminal pro-peptide of type I procollagen (P1NP) is a recently introduced biochemical turnover marker (BTM) that is considered the most sensitive index of bone formation in patients with bone disease of varying origins. We assessed the level of P1NP and bone mineral density as measured by dual X-ray absorptiometry (DEXA) in β-thalassemic pediatric patients for early detection of signs of bone remodeling and assess their correlation to the efficacy of therapeutic interventions (blood transfusion & chelation therapy).

Methods: Our study included 60 thalassemic children and adolescents, regularly following up at the Pediatric Hematology clinic of the Pediatric Hospital, Ain Shams University, 40 of them with thalassemia major and 20 thalassemia intermedia. Their ages ranged between 12 to 18 years and they were compared to 30 age and sex matched healthy controls. All children were subjected to full history taking, full clinical examination, laboratory investigation (CBC, serum Ca, Ph, Alkaline phosphatase and serum P1NP level) and DEXA scanning.

Results: There was significantly lower serum Ca level among TM and TI patients compared to control (P<0.001). There was significantly lower serum Ph among TM patients compared to control (P<0.001) and among TI patients compared to control (P<0.001). Serum Ph was correlated to BMI (r=0.27; P=0.045). Alkaline phosphatase was significantly higher among TM patients compared to control (P<0.001) and among TI patients compared to control (P<0.001). Serum Alkaline phosphatase was correlated with serum Ca level (r=0.268; P=0.046) and negatively correlated with serum Ph level (r=-0.270; P=0.043). Serum P1NP level was significantly lower among cases compared to control (P<0.001). Serum P1NP level was positively correlated with serum ferritin level. There was highly significant correlation between P1NP and BMD of both groups. ROC curve analysis showed that the cut off value of P1NP level between thalassemia major cases and control was at 1.00, with sensitivity (97.5%) and specificity (100%) and between thalassemia intermedia cases and control, the cut off value was (0.9) with sensitivity of (90.0%) and specificity of (96.67%).

Conclusion: This study highlighted the importance of P1NP for diagnosing bone remodeling and osteopenia among thalassemia patients.

Amino acid and acylcarnitine concentrations in full-term infants of diabetic mothers and their relations to in utero iron status

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Objective: To estimate cord blood amino acid and acylcarnitine concentrations in term infants of diabetic mothers (IDMs) and to assess their relations to cord blood ferritin level.

Methods: We studied 50 term IDMs (cases) and 25 healthy newborns (controls). Thirty-seven (37) cases were infants of gestational diabetic mothers (IGDM) while 13 cases were infants of pre-gestational diabetic mothers (IPGDM). Amino acid and acylcarnitine concentrations were measured in cord blood dried spot samples from all newborns using liquid chromatography tandem-mass spectrometry (LC-MS/MS). Cord blood ferritin was