LETTERS TO THE EDITOR

Visceral Seric Proteins and Acute Phase Reactants as Indicators of the State of Nutrition and Inflammation in Children with Cystic Fibrosis

Sir,

We have read the article by M. Bondestam et al. (1) with great interest. It comments on the convenience of quantifying the concentrations of certain seric proteins and acute phase reactants to evaluate the nutritional state of children who present an increased susceptibility to acute infections. These authors found that this group of patients had significantly lower average levels of seric albumin, retinol-binding protein, α2-macroglobulin and ceruloplasmin than the controls, which suggests that the concentrations of seric proteins and acute phase reactants are quickly modified by the altered nutrition of those children. Also, Ingenbleek et al. (2) suggested using seric concentrations of visceral proteins and acute phase reactants to study the nutritional and inflammatory states.

As already known, children affected by cystic fibrosis (CF) frequently suffer from inadequate nutrition and repeated respiratory infections of the lower tracts. We have recently studied the nutritional and inflammatory states of 14 children affected by CF (8 males and 6 females; average age 7.9±3.7 years), when these were in a non-infectious clinical state. Our study is based on seric concentrations (g/l; mean±SD) of certain visceral proteins (albumin: 40.3±4.5; thyroxin-binding prealbumin: 0.19±0.01; retinol-binding protein: 0.025±0.008; transferrin: 3.12±0.65) and acute phase reactants (orosomucoid: 0.91±0.20; α1-antitrypsin: 2.05±0.43; α2-macroglobulin: 2.46±0.26; haptoglobin: 2.02±0.67; ceruloplasmin: 0.43±0.06). We have compared them to a control group of 16 healthy children (8 males and 8 females; average age 8.5±3.2 years): visceral proteins (albumin: 41.6±2.8; thyroxin-binding prealbumin: 0.20±0.01; retinol-binding protein: 0.025±0.003; transferrin: 2.86±0.69) and acute phase reactants (orosomucoid: 0.58±0.24; α1-antitrypsin: 1.62±0.35; α2-macroglobulin: 2.46±0.36; haptoglobin: 0.50±0.28; ceruloplasmin: 0.32±0.05) (3). No statistically significant differences were observed between the two groups for the visceral seric proteins (albumin, thyroxin-binding prealbumin, retinol-binding protein, transferrin). However, there were some differences in some acute phase reactants such as haptoglobin ($p<0.001$), ceruloplasmin ($p<0.001$), orosomucoid ($p<0.05$) and α1-antitrypsin ($p<0.05$) (Mann-Whitney test) in the CF group.

By analyzing the results, it can be deduced that children with CF are affected by a chronic inflammatory condition. The maintenance of the plasmatic levels of visceral proteins in the normal range suggests that they do not need a greater proteic contribution than that already given.

We agree with Bondestam et al. (1) as to the convenience of using levels of certain seric proteins and acute phase reactants to evaluate the nutritional state of children susceptible to infections. Also, they can be used to determine the inflammatory state.

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Bone Mineral Analysis in Obese Children

Sir,

We would like to refer to the paper entitled "Mineral Metabolism in Obese Children" by G. Zamboni et al., which appeared in your September issue 1988; 77: 741.

As correctly stated by the authors, there are several biological and methodological factors which make the analysis of serum levels of calcitonin (CT) difficult. To this regard, it is preferred to evaluate the CT concentrations after secretagogue stimulation (Calcium/pentagastrin), that evaluates more accurately the CT endogenous reserve (1).

Regarding the physiological CT reserve in obese subjects, we have previously shown that CT levels after calcium/pentagastrin stimulation are higher in young obese females as compared to young normal-weight controls. Morevover, the basal CT and ionic calcium levels are quite similar in these groups (2, 3).

On the other hand, it is important to mention that the bone mineral content analyzed in the forearm (radius and ulna) using monophotonic absorptiometry (131 Iodine), only allows a preliminary estimate of the total and/or regional mineral content. Moreover, there is a variable correlation among the values obtained at this level and those corresponding to other axial and appendicular structures of the skeleton (4). Better results are obtained with dual photon absorptiometry with improved sensitivity as well as specificity (5). Using this methodology (153 Gd: 44 and 100 KeV peaks, DP4-Lunar Corporation), we have analyzed the total body bone mineral density (g/cm^2) and the total body calcium content (g) in 6 children with prepuberal obesity (3 years of disease evolution) and 5 healthy controls (matched by age, height and ethnic group). The results obtained are shown in Table 1. As shown, obese children have a tendency to higher values in bone density as well as total calcium content, without statistically significant differences. However, our results can be related to recent findings in obese adults, who have increased bone mineral mass associated to body weight and fat content increments. These findings would explain the lower osteopenia incidence and lower fracture risk found in this group (6).

We consider that it is necessary to continue the studies on mineral metabolism in larger samples of children with obesity, especially with regard to the physiological reserve of CT, total bone mineral content, bone mineral density, and total body calcium, since this last parameter represents a constant mineral fraction (1.37%) of the skeleton.

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