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AN ANTHROPOMETRIC FOLLOW UP STUDY OF CHILDREN WITH VESICOURETERAL REFLUX AND COELIAC DISEASE

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Abstract: The growth and development of children with two different chronic pathological states, namely vesicoureteral reflux (VUR) and coeliac disease (CD), were studied and compared with the growth and development of normal children of similar age and sex by calculation of standard deviation score (SDS).

VUR: Over a 12 year period 33 children with VUR grades II–III were treated medically and followed throughout a period of an average 7.5 years. The mean SDS for both height and weight of children with VUR was far below the normal at the detection of the disease. The retardation in weight was greater than in height. At the conclusion of the follow up, values of SDS for both weight and height approached normal. The increasing weight and height velocity showed a close correlation with the improvement of renal function.

CD: Growth in height and weight were compared in 13 children with CD and 10 patients with transitoric glutensensitive enteropathy (TGE). At the start of a gluten free diet the mean SDS for weight was found to be far below the normal values in both diagnostic groups but became less negative as they progressed on an appropriate diet during the follow-up period. No significant difference between the two groups was observed. Although mean SDS for height was below normal, it turned out to be less negative than for weight. While the coeliac group responded with a marked increase in height velocity to the gluten free diet, in the children showing a TGE it remained practically unchanged. This unresponsiveness of linear growth to the gluten free diet points towards a cause of growth failure rather than that of transient gluten sensitivity.

Key words: Vesicoureteral reflux, Coeliac disease, Follow-up anthropometric study, Standard deviation score, Transitoric glutensensitive enteropathy.

Introduction

It is well-known that chronic diseases may be associated with growth retardation, sometimes the only predominant clinical feature pointing towards the possibility of an underlying chronic disease. The causal relationship is often shown by catch up growth following the proper treatment of the primary abnormality.

Material and Methods

The growth and development of children with two different chronic pathological states, namely vesicoureteral reflux (VUR) and coeliac disease were studied and compared with the growth and development of normal children of similar age and sex by calculation of standard deviation score (SDS). The SDS enabled a pooling of sex and age-groups (see Tanner et al. 1971). In this formula x represents the actually measured height or weight, the x means the idal height or weight for age, SD_x means the standard deviation of ideal height or weight for age. Means and SD-s for height and weight for age were taken from the data reported by Eiben (Eiben et al. 1971).

Results

Vesicoureteral reflux

Over the 12 year period 33 children with VUR grades II–III (Heikel–Parkkulainen 1966, Ducket–Bellinger 1982) were treated medically and followed up throughout a period of an average 7.5 years.

The following criteria were required in the study:

1. Age more than 12 months at the time of detection of vesicoureteral reflux;
2. Medical management without surgical intervention;
3. Two years follow-up;
4. Persistence of VUR after urinary tract infection had been abolished;
5. VUR with otherwise normal renal architecture;
6. No other chronic illness was present

The results of the study are shown in the Fig. 1. The mean SDS for both height and weight of children with VUR was far below that of the normal at the detection of the disease. Retardation in weight was greater than in height. At the conclusion of the follow-up, values of SDS for both weight and height did not differ from the normal values and velocity showed a close corellation with the improvement of renal function.

It is our assumption that anthropometric studies of patients with reflux should be sensitive parameters of the overall effect of reflux-nephropathy during long-term floow-up.

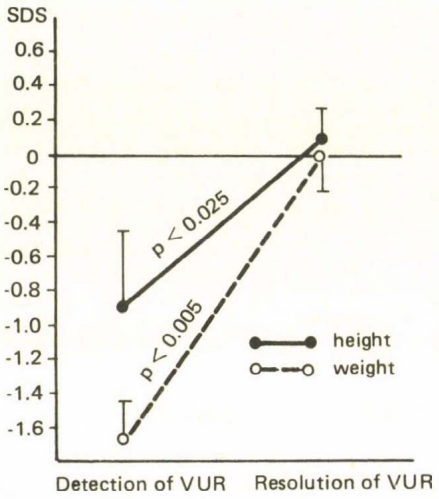

Fig. 1: Standard deviation scores (SDS) and standard errors (S) of children with vesicoureteral reflux

Coeliac disease

Coeliac disease is an adverse response to wheat gluten resulting in villous atrophy with hypoplastic flattening of the upper small intestinal epithelium, accompanied by the well-known consequence and signs of melabsorption (see Groll et al. 1980).

Clinical features and histological findings in the coeliac disease and the transitoric gluten sensitive enteropathy (TGE) at the early phase are the same. Only after a 3 year follow-up can the two disorders be differentiated from each other. By following the growth of children in height and weight, we attempted to find distinctive anthropometric characteristics for the two types of gluten-induced malabsorption.

Growth in height and weight were compared in 13 children with coeliac disease (CD) and 10 patients with transitoric gluten sensitive enteropathy. At the start of a gluten-free diet mean SDS for weight was found to be far below the normal values in both diagnostic groups, but became less negative as the time on an appropriate diet progressed (Fig. 2).

During the follow up period no significant difference was observed between the two groups. Although mean SDS for height was below normal it turned out to be lass negative than for weight (Fig. 3).

While the coeliac group responded by a marked increase in height velocity to the gluten free diet, in children showing a TGE it remained practically unchanged. This unresponsiveness of linear growth to the gluten free diet points towards a cause of growth failure rather than that of gluten sensitivity.

It is of interest – but difficult to explain – that while in this group of children linear growth did not respond to a gluten-free diet, weight for height showed an appreciable increase suggesting marked changes in body composition. It should be pointed out that the rapid catch up growth in response to a gluten-free diet convincingly shows that this group of children suffered from real a gluten sensitivity, that is, from coeliac disease.

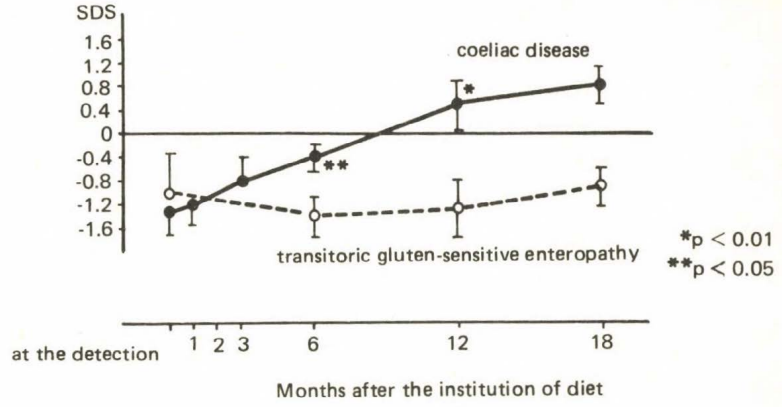

Fig. 2: Standard deviation scores (SDS) and standard errors (SE) for weight of children with coeliac disease and transitoric gluten-sensitive enteropathy.

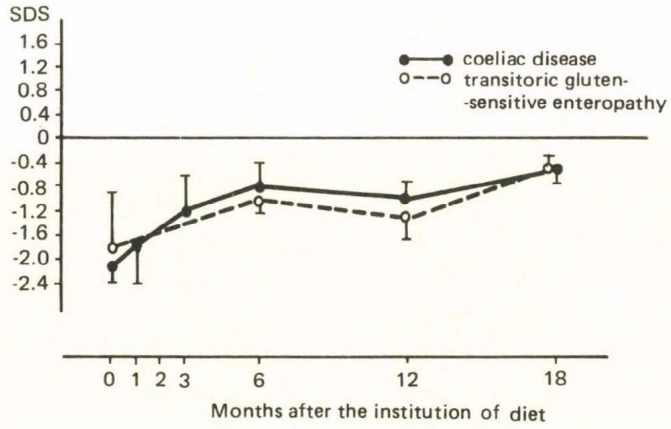

Fig. 3: Standard deviation scores (SDS) and standard errors (SE) for height of children with coeliac disease and transitoric glutensensitive enteropathy.

Finally the authors should like to point out that the patient sample in their study was rather small and further observations are already in progress to investigate the present conclusions on a larger number of children suffering of different chronic diseases.

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