

The importance of cow's milk protein intolerance in chronic diarrhoea of children

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A survey is given of the cases diagnosed as cow's milk protein intolerance in the last 5 years. The diagnosis was established on the basis of the regression of clinical symptoms after elimination from the diet of cow's milk and their recurrence after milk challenge. In more than half of the cases intestinal biopsy was carried out; three patients were rebiopsied after milk challenge.

Intestinal biopsy is indicated solely in cases when the exclusion of coeliac disease is necessary for the correct diagnosis.

Cow's milk protein intolerance denotes a condition where the immunological reaction elicited by the consumption of cow's milk is accompanied by clinical symptoms [12].

The existence of intolerance to cow's milk was first described at the beginning of this century [1] but even in the forties the condition was considered to be rare, probably because only the most serious cases could be diagnosed [9]. Then the criteria established by Goldman et al [5] and the relationship between cow's milk protein intolerance and the morphological changes of the jejunal mucosa discovered by Lamy et al [8] have facilitated the diagnosis. In spite of this, there is still no general agreement on its criteria [9, 10, 12, 15].

PATIENTS AND METHODS

A total of 35 patients, 16 boys and 19 girls, were studied. The diagnosis of cow's milk protein intolerance was based on the remission of symptoms after the

elimination of cow's milk from the diet and the relapse that follows a milk challenge. Milk challenge was usually done twice with 5–10 ml/kg of pasteurized cow's milk. If there was no reaction after the first exposure, the challenge was repeated 24 h later. Intestinal biopsy was carried out in 28 patients. To exclude giardiasis, an impression smear was prepared from the biopsy material and stereomicroscopic observation was followed by histological examination with the light microscope and later by scanning electron microscopy.

RESULTS AND DISCUSSION

Figure 1 shows the average time of introduction of cow's milk in the diet, the presentation of clinical symptoms, the end of the illness and the beginning of the gluten containing diet. The clinical course can be seen in Fig. 2. Case 35 has been left out of consideration.

The time of introduction of cow's milk into the diet was at 2.8 ± 1.8 months of age. The shortest lactation time was one week, the longest 6 months. The time of the onset of symptoms was at 4.1 ± 2.2 months.

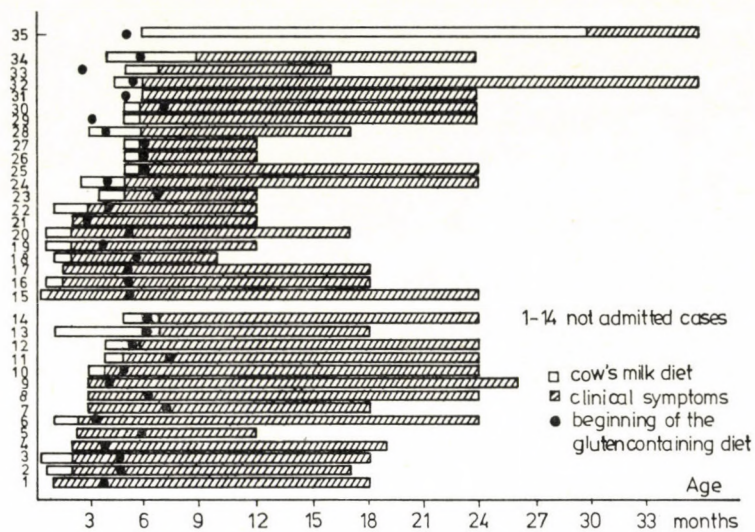


FIG. 1. Appearance of clinical symptoms of cow's milk protein intolerance

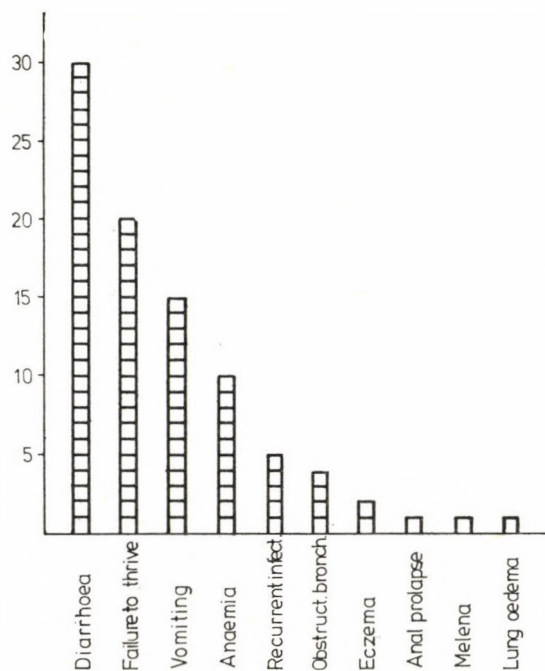


FIG. 2. Leading clinical symptoms at the beginning of cow's milk protein intolerance

TABLE I
Appearance of clinical symptoms of cow's milk protein intolerance

	Age, months			
	At beginning of cow's milk diet	At onset of the disease	At beginning of gluten containing diet	At cessation of symptoms
X	2.8	4.1	5.0	19.5
SD	1.8	2.2	1.2	5.6

This was in contrast with the observations that in 90% of the cases the symptoms would develop before the 3rd month of life [4, 5]. Kuitunen et al [7] even mention 2 months for presentation of the disease. [Table I].

In our patients the symptoms of cow's milk intolerance disappeared at 19.5 ± 5.6 months of age. In two cases the disease terminated only at the end of the third year of life. In one of them the symptoms presented after a serious viral infection at the

age of 30 months, and cow's milk could be reintroduced into the diet at the age of 36 months. The other patient suffered from temporary IgA deficiency and had a recurrent giardiasis before the manifestation of cow's milk intolerance. In Case 34 the illness was preceded by an *E. coli* enteritis.

Introduction of a gluten containing diet was done at 5 ± 1.2 months of age. In two cases the gluten containing diet was started just after the symptoms of cow's milk intolerance had appeared. In every case when gluten was introduced earlier than a month before the appearance of symptoms of cow's milk intolerance, intestinal biopsy was performed right at the beginning to exclude coeliac disease.

Figure 2 shows the most frequent clinical symptoms of our patients with cow's milk intolerance. Corresponding to data in the literature the leading symptoms in our patients

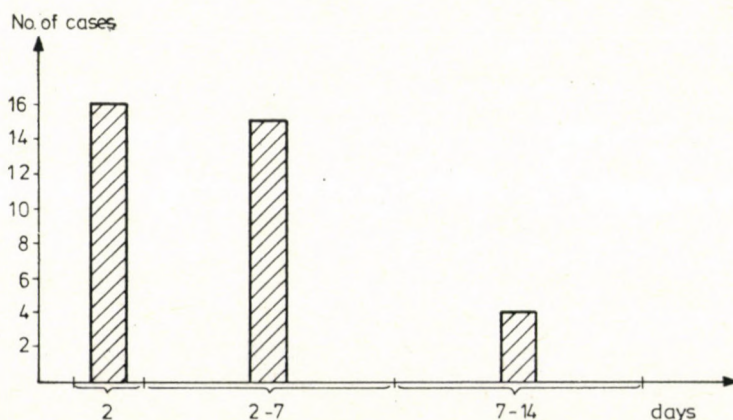


FIG. 3. Recurrence of symptoms after the first cow's milk challenge following a cow's milk free diet

were diarrhoea, failure to thrive and vomiting. Eczema was observed in two cases only; in one of these anal prolapse, in the other serious pulmonary oedema were the main complications. The degree of failure to thrive corresponded to about 10 percentile, while that of body height was generally between 25–50 percentile. In contrast with coeliac patients, the children with cow's milk intolerance usually had a well proportioned, slender constitution and they did seem to be seriously ill.

During the disease, a temporary lactose malabsorption was observed in 19% of the patients. In these cases milk challenge was delayed until lactose absorption had normalized.

Figure 3 shows the onset of symptoms after the first milk challenge.

As it can be seen, they appeared within 48 h in 47% of the cases. In 11% we observed a coeliac disease-like reaction, where the symptoms only presented between the 7th and 14th day. These forms were difficult to diagnose. In the other cases the time between the milk challenge and the appearance of symptoms was between 2 and 7 days, in agreement with the fact that in cow's milk intolerance the change of digestive function is related to the damage to the intestinal mucosa [2, 3, 7, 8, 10, 13, 14].

In 7 children kept on cow's milk, intestinal biopsy revealed in two cases slightly increased cellular infiltration, in 4 patients partial villous atrophy (Fig. 4) and in one case a subtotal villous atrophy (Fig. 5). This latter

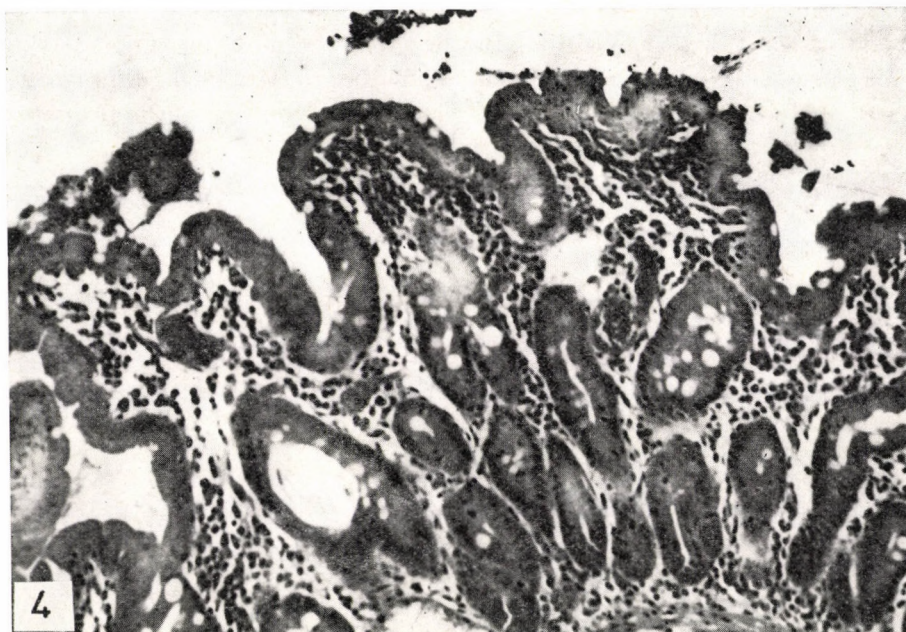


FIG. 4. Partial villous atrophy (haematoxylin eosin, $\times 40$)

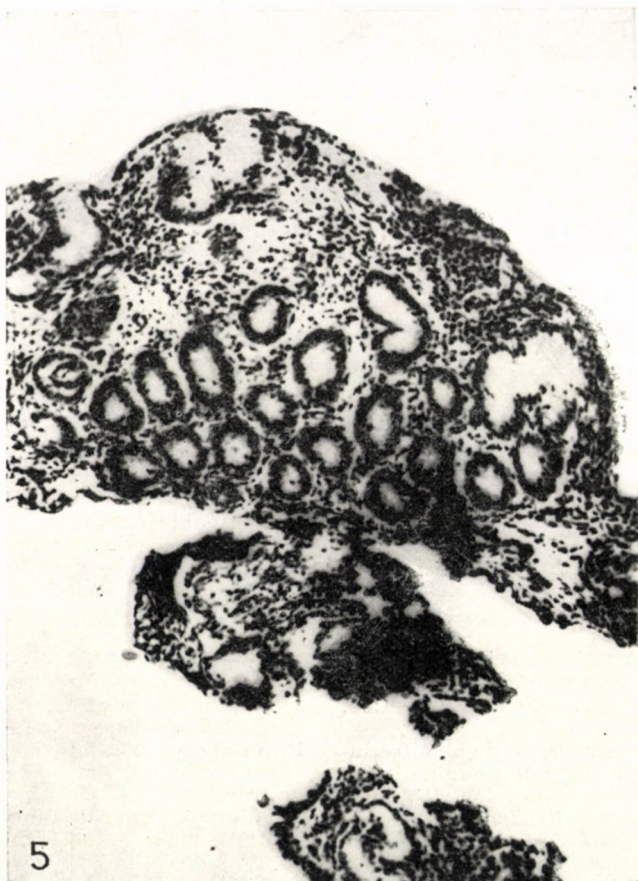


FIG. 5. Subtotal villous atrophy (haematoxylin eosin, $\times 40$)

case subsequently developed into a typical coeliac disease.

In three cases the biopsy was performed before and following milk challenge which lead to partial villous atrophy in two of them. In the third case the light microscopical picture did not show any significant change, but scanning electronmicroscopy disclosed cellular oedema and microvillus destruction.

Three patients had already been on a cow's milk free gluten containing diet for a longer time when the in-

testinal biopsy was performed. Coeliac disease was clearly excluded by the biopsy. In one case *Giardia lamblia* was detected.

The elimination diet consisted of human milk, meat and vegetables. Changes in the diet always caused some difficulty because the infants had taken a liking to the one they had been given.

To conclude, cow's milk protein intolerance is a transitory illness limited to a certain age. Its diagnosis is an everyday problem which rests on the

history, the clinical symptoms and on the response to a cow's milk challenge after a cow's milk free diet given for a certain period. Intestinal biopsy is justifiable only if exclusion of coeliac disease is necessary for the correct diagnosis.

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