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DOES FOOD INTOLERANCE PLAY A ROLE IN JUVENILE CHRONIC ARTHRITIS?

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SUMMARY

Sixty children with juvenile chronic arthritis (JCA) have been examined at the paediatric rheumatology out-patient clinic in Maastricht, of whom three ultimately appeared to have a food intolerance. In one of these three patients, there appeared to be a relationship with joint complaints. In the course of the elimination/challenge tests which were conducted, severe painful swelling of the knee occurred rapidly after each challenge. Three challenges were carried out with the same result each time. Since the symptoms did not disappear entirely following elimination of milk, it was concluded that milk intolerance in this case was an aggravating factor in a seronegative monoarticular JCA. In the second and third patients, a strict diet had no positive effect on the joint problems. In conclusion, the existence of such a connection between food and chronic joint complaints has been made clear, it only plays a role in incidental cases.

KEY WORDS: Juvenile chronic arthritis, Food hypersensitivity, Children.

VIRTUALLY every mother at the paediatric rheumatology out-patient clinic wants to know whether she should prevent her child from eating certain types of food. The link between food intolerance and joint complaints is particularly referred to when children with known food intolerances are concerned. The extent to which this suspicion is justified, however, still remains to be seen.

Articles are regularly published in which reference is made to the possible connection between food intolerance and joint complaints [1–7]. A survey of the literature reveals case histories in which the joint complaints of individual patients were aggravated by the consumption of certain foods [8–13]. There are sometimes indications in the case histories of patients which lead one to suspect such a connection. When more extensive research is subsequently carried out, however, it is by no means always possible to find hard evidence of this relationship [14, 15].

There is still a good deal of ambiguity around the concept of 'food intolerance' [16, 17]. Terms such as allergy, pseudoallergy and intolerance are used interchangeably. This article employs the generally accepted terminology: food intolerance as the all-embracing concept [17]. Given the low predictive value of immunological tests, the diagnosis of food intolerance must be based on 'elimination/challenge' tests [18–21].

PATIENTS

Sixty children with juvenile chronic arthritis (JCA) have been examined at the paediatric rheumatology out-patient clinic in Maastricht. Three patients are described whose case histories showed a suspected link between food intolerance and their joint complaints.

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Case 1

Patient MB visited our clinic at the age of 3 yr and 2 months. She had been known to us since the age of 1 yr, and had a severe allergy to milk, soya products and certain vegetables which manifested in the form of skin rashes, vomiting and diarrhoea. The patient had clear intolerance reactions to a number of so-called hypoallergenic foods and used Pregomin as a milk substitute [a hydrolysate of soya and collagen (Milupa)].

Laboratory tests at the age of 9 months revealed that she had a total IgE of 110 kU/l, RAST for cow's milk class 3 positive. Food intolerance was confirmed at the time by two elimination/challenge tests. On the present occasion, she was brought to the paediatric rheumatology out-patient clinic because she had been complaining of pain in the left knee for a number of days. The knee was warm and swollen, and its movement was restricted. Over the next few months, restricted movement of both ankles and the left wrist also developed. Laboratory tests revealed that she had a ESR of 45 mm/h and a positive ANA.

She was diagnosed as suffering from an oligoarticular form of JCA, ANA positive. Treatment consisted of non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapy and sleeping braces. She was also given frequent ophthalmological check-ups, with uveitis being detected on one occasion.

Since she was known to have food intolerance problems, the possibility of food intolerance playing a role in the oligoarthritis was considered. A strict diet, however, had no positive effect on the joint problems, while the patient developed severe gastrointestinal complaints during this period. After Pregomin was replaced by Pregestimil (a casein hydrolysate produced

by Mead Johnson), the gastrointestinal symptoms disappeared. Reintroduction triggered a relapse.

After more than 2 yr, the joint complaints gradually disappeared. The JCA has been in remission for the past 2 yr. The food intolerance, however, is still active. In this patient food intolerance and JCA are two entirely independent syndromes.

Case 2

DJ is a 12-yr-old boy who had been suffering from a systemic form of juvenile chronic arthritis since the age of six. His mother suspected a connection between this ailment and his diet. After the initial period with symptoms of high fever for many weeks, general malaise and very apparent stiffness and impairment in various joints, his mother put him on a diet. Post aut propter, the symptoms disappeared. In challenges, soya produced skin and intestinal complaints.

After 4 yr without symptoms, they returned following liberalization of the diet. Both knees and the left ankle were painful and swollen. Laboratory tests showed the ESR to be 52, the ANA a dubious positive and the HLA-B27 negative. A RAST test showed an IgE for soya class 3 and for peanuts class 5 positive. The total IgE was 692 kU/l. To confirm or exclude food intolerance as a factor in his JCA, an elimination/challenge diet was then followed. Neither elimination of soya and peanuts nor an extensive elimination diet appeared to have any influence on his JCA.

Case 3

ST is a girl who had been known to be milk intolerant since the age of 6 months. This intolerance manifested in the form of eczema and light diarrhoea. Her mother always managed to control these symptoms effectively by restricting the milk in her diet. At the age of 2 yr, she was brought to the out-patient clinic with a painful, swollen right knee. In laboratory tests the ESR was 47 mm/h and the ANA was negative. NSAIDs were given continually. The course of the symptoms continued to fluctuate, with interim inflammation. The mother suspected a relationship with the milk allergy. In the course of the elimination/challenge tests which were conducted, severe painful swelling of the knee occurred rapidly after each challenge. Three challenges were carried out with the same result each time. Since the symptoms did not disappear entirely following elimination of milk, it was concluded that milk intolerance in this case was an aggravating factor in a seronegative monoarticular JCA. After 2 yr, the patient was entirely free of symptoms and could tolerate milk.

DISCUSSION

In these three cases, joint complaints developed in patients who were known to suffer from food intolerance. All three cases gave reason to investigate a possible connection between the joint complaints and a food intolerance.

The connection between rheumatoid arthritis (RA) and diet in adults has frequently been described. A number of cases involving patients who developed joint complaints after ingesting certain food substances have been described in the literature [8, 10–12].

Darlington [2] described a study focused on determining the food substances to which RA patients displayed the greatest intolerance. These were primarily grain (56%) and wheat (54%).

Panush *et al*. [32] carried out a double-blind controlled study in which the 'Dong diet' was compared with a placebo diet in RA patients. There was no demonstrable difference with the control group. Two of the 11 patients on the Dong diet reported diminished symptoms. Also in other studies [33–35] comparing a test diet with a placebo diet, no significant differences between diet and control group were found. However, there are still individual patients who do notice a lessening of symptoms.

Van de Laar and van der Korst [18] have described a double-blind controlled trial with allergen-free food *vs* food containing milk allergens and azo dyes carried out with 78 rheumatoid factor-positive RA patients. Although no difference could be demonstrated to the detriment of milk allergens and/or azo dyes, nine patients seemed to react favourably to allergen restriction. Six of these nine patients were subsequently subjected to a placebo-controlled rechallenge [31]. A food intolerance was demonstrated in four of these six patients.

Only two cases involving the connection between joint complaints and food intolerance in children have been described in the literature.

Ratner *et al*. [9] describe a 14-yr-old girl with JCA whose symptoms reacted favourably to the elimination of milk from her diet. She was subjected to four rechallenges, with recrudescence of symptoms occurring after each one.

Golding [13] describes a girl suffering from arthritic complaints since the age of 12 in whom a synovitis could be induced by the drinking of milk.

On the other hand, Denman *et al*. [14] describe two cases involving children with JCA in which an elimination diet produced no demonstrably favourable effect on the symptoms.

Sixty children have been examined at the paediatric rheumatology out-patient clinic in Maastricht, of whom only three ultimately appeared to have a food intolerance. In one of these three patients, there appeared to be a relationship with joint complaints.

Various researchers have looked for models to explain the connection between diet and joint complaints. Coombs and Oldham [22] and Panush *et al*. [23, 24] have demonstrated that arthritis can be induced in rabbits by having them drink cow's milk. In various studies [25–28], Carini *et al*. have found a connection between food intolerance and IgE and IgG immunocomplexes which induce arthralgic complaints.

Various studies have found a connection between RA and increased intestinal permeability [29]. This may provide an explanation for the presence of food

allergens in the bloodstream. In any case, the question is under discussion as to whether this increased permeability is a primary symptom in RA or the consequence of the simultaneous use of NSAIDs [30].

The prevalence of food intolerance in RA patients has been estimated by Van de Laar *et al*. [31] and Panush at 5%.

The prevalence of food intolerance in the normal population is not precisely known. Research by Young *et al*. [36] into intolerance for eight foods resulted in a prevalence of 1.4–1.8%. Another piece of research by Young *et al*. [37] into intolerance for food additives resulted in a prevalence of 0.01–0.23%. Research into the adult Dutch population resulted in a prevalence of 2.4% [38]. A percentage of 3–5% is regularly mentioned for children based on studies on the incidence of cow's milk intolerant [21, 39, 40]. According to Madsen [41], the prevalence of food additive intolerance in children aged 5–16 yr is 1–2%. It is questionable whether the estimated prevalence in rheumatic patients (0–5%) really represents a significant difference.

There are considerably more RA patients who think they suffer from food intolerance than can be demonstrated by careful research. For example, Felder *et al*. [15] asked a large number of RA patients whether they thought they were intolerant to particular food substances. Of the 159 respondents, 52 believed they suffered from food intolerance. Further research, however, could not confirm this in a single case.

Food intolerance thus appears to play a role in only a small proportion of rheumatic patients. This implies that it makes no sense to put all people with chronic joint complaints on a strict diet. If the case history indicates that food intolerance may play a role, further investigation will of course have to be carried out. Screening of suspected patients is effected with the help of elimination/challenge tests and should only be carried out under the supervision of a dietician and a doctor. The literature does not provide sufficient justification for subjecting all patients with chronic joint complaints to an elimination diet.

CONCLUSION

The cases described here illustrate the problem which arises when a connection is made between joint complaints and food intolerance. As the literature demonstrates, it is very difficult to pronounce an unambiguous verdict on the relationship between joint complaints and food intolerance. Although the existence of such a connection has been made clear, it only plays a role in incidental cases, so that it does not make sense to put every patient with chronic joint complaints on a strict diet.

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