Annotations

Soy feeding in infancy

Growing concern over intolerance of cows' milk protein is leading to more frequent diagnosis of the condition. For many years in the USA soy bean feeds have been extensively used in children with putative cows' milk intolerance. There has recently been a tendency for increased use of soy bean in the UK.

Unfortunately food allergy is a state which easily allows for exaggeration of incidence and a tendency to overdiagnosis in the young infant. It is therefore a matter of some importance to establish the true incidence, how often this should lead to the elimination of cows' milk from the diet, and whether soy is the appropriate form of management.

Types of cows' milk intolerance

Intolerance of cows' milk can be divided into two major types. The first is gastrointestinal intolerance associated with diarrhoea, partial or subtotal jejunal mucosal (villous) atrophy, malnutrition, and in some hypersensitive cases, the development of anaphylactic reactions with shock and fulminating diarrhoea when exposed to cows' milk protein. This disorder is essentially self limiting¹ and tends to clear up during the second year of life. In early infancy however, it can lead to severe failure to thrive and occasionally to death.

The second comprises the more common forms of atopy. In infancy eczema is the usual manifestation, but in addition various forms of urticaria may occur and be followed by asthma later in childhood. Both forms may be present in the same child.

Apart from these well characterised entities there is a range of vague signs and symptoms to which milk protein intolerance is often ascribed as the cause. Excessive crying, vomiting, wind, colic, vague claims of ill health, and transient skin rashes have all been used as a justification for eliminating cows' milk protein from the diet. In most such cases there is no evidence of chronic diarrhoea or failure to thrive.

Estimates of the incidence range widely, varying from 0.1% to 8%.² A reasonable working figure would be that of the order of 0.5%.³ While one cannot but agree with the view that symptoms due to cows' milk hypersensitivity should not be diagnosed as due to psychosocial factors or parental incompetence⁴ the reverse is even more cogent since

psychosocial factors are the major cause of failure to thrive and have ill-defined symptoms. Treating babies suffering from deprivation, or their parents' emotional problems, with soy formula is not likely to be helpful to either. The danger of overdiagnosis of cows' milk hypersensitivity seems a more serious threat than its underdiagnosis. In infants from satisfactory homes the key to diagnosis is the centile chart. Babies who are thriving should probably not have their diets altered.

Rationale for use of soy formulae

The basic assumption underlying the use of soy as a substitute for cows' milk is that it is less allergenic. There are two main reasons for its use: (1) as a replacement for milk feeds where proved or putative milk protein intolerance or allergy exists; (2) used prophylactically in infants who are considered to be at high risk of allergy, particularly those with a family history of atopy.

The avoidance of cows' milk products in early life has had conflicting results in preventing later allergy. The obvious method is breast feeding⁵ but this annotation is concerned with situations in which breast feeding is ruled out. Some workers claim that babies fed soy instead of cows' milk have less subsequent allergy.⁶ However, a recent study which examined children with a bi-parental history of allergy was unable to detect evidence of a beneficial effect from soy feeding.⁷ A British group have claimed a beneficial effect but have not yet published their data.⁸

Allergenicity of soy formulae

Soy protein can cause signs of gastrointestinal intolerance⁹ with diarrhoea, fever, blood in the stools, vomiting, and weight loss, associated with jejunal mucosal atrophy. Acute anaphylactic responses have also been described.¹⁰

There is no evidence that soy protein is less capable than milk protein of producing gastrointestinal sensitivity in humans. Soya-induced colitis may occur in young infants with suspected cows' milk intolerance.¹¹ Enterocolitis in low birth-weight infants has been associated with both cows' milk and soy protein intolerance.¹² Combined milk protein and soy intolerance has been recognised

with increasing frequency.¹³ Soy intolerance may occur when fed immediately after milk protein-induced gastrointestinal damage has occurred. This casts doubt on its value in this condition.¹⁴ There is additional evidence of a high incidence of soy sensitivity in older children with atopy on the basis of intracutaneous tests.¹⁵ This is all evidence that soy cannot be regarded as hypoallergenic in humans.^{13 16}

The importance of soy intolerance and its possible effects on its usefulness as a substitute for cows' milk remain a matter for speculation. Some workers still claim that soy protein is only weakly antigenic in man¹⁷ and are critical of other studies for failing to be sufficiently rigorous in identifying soy protein hypersensitivity with certainty.

Role of soy formulae

Modern soy-based infant formulae are satisfactory feeds and there are no major problems in their use apart from expense. On the basis of current knowledge there seems little justification for their widespread use as a substitute for cows' milk-based formulae. Casual treatment of vague symptoms and signs and of unsubstantiated cows' milk protein intolerance is undesirable because it might well lead to overdiagnosis of food allergy with consequent long-term effects on the child's rearing, and because it might lead to misdiagnosis and late diagnosis of important diseases. In genuine gastrointestinal cows' milk protein intolerance it is doubtful whether soy is appropriate because of concerns regarding its own allergenicity in this condition. True gastrointestinal cows' milk intolerance is a sufficiently serious condition to warrant optimal management. It may be that genuine atopy in infancy (eczema) may justify a trial with soy formula in at least some cases¹⁸ although the valuation of elimination diets incorporating soy has been the subject of sometimes heated controversy.^{19 20}

Conclusions

- (1) There is conflicting evidence on whether soy formula feeding will lead to a lower incidence of allergy in infants predisposed to atopy. It may benefit some infants with atopic eczema.
- (2) The occurrence of soy intolerance in at least some infants with milk protein-induced gastrointestinal damage, calls into question its use in this disease. Proved cows' milk protein intolerance should be treated with formulae consisting of protein hydrolysates. The diagnosis of this condition should not be made without careful evaluation by an expert in the field.
- (3) The indiscriminate use of soy formula for vague symptoms and signs not proved to be due to cows' milk intolerance is to be avoided.

- (4) Soy feeds should not be freely available without prescription and should only occasionally need to be prescribed.

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