Soy Protein for the Prevention and Treatment of Children With Cow-milk Allergy

Jagteshwar Grewal

Basics of Cow-milk Allergy (CMA)

- One of the most common problems faced by pediatricians.
- Disease of infancy – usually appears in first few months of life.
- Estimates of the prevalence of CMA vary from 0.3% to 7.5%.
- The most commonly affected organ is the gastrointestinal tract, followed by the respiratory tract and the skin.
  - 88% of affected infants present with diarrhea and mucus.
  - Vomiting is the second most common manifestation.
  - Malabsorption and failure to thrive occasionally result.
- Difficult to differentiate CMA from milk-intolerance due to lactase deficiency and other causes.
Soy Protein Formula (SPF)

- Primary source of protein in SPF is soy-protein isolates.
- SPF first described as a cow-milk substitute in 1909.
- SPF used for feeding babies with CMA since 1929.
- SPFs also given to genetically atopic, allergy-prone infants for the prevention of atopic diseases.
- Recent increase in the availability of formulas derived from hydrolysis of cow-milk proteins has triggered a debate on the allergenicity of SPFs.

Use of SPFs for the Treatment of Children With CMA

- Weak and inconsistent evidence as to effectiveness.
- In 1983, the Committee on Nutrition of the American Academy of Pediatrics concluded that “Instances when soy-protein should not be used included…the dietary management of documented clinical allergic reactions to cow-milk protein.” The Committee stressed the use of protein hydrolyzed formula.
- In 1990, the Committee on Nutrition of the European Society for Pediatric Gastroenterology and Nutrition reported that available data did not support the use of SPFs in infants with suspected or proven adverse reactions to cow-milk protein.
Use of SPFs for the Treatment of Children With CMA (cont.)

- In 1981, Pekkio et al. stated, “…when SPFs are used as a substitute for cow-milk allergy, allergy to soy protein develops in a far higher number of children.”
- In 1989, Eastham claimed that soy protein intolerance develops in 15-50% of CMA cases.
- In 1990, Bock and Atkins reported that only 7% of children with CMA had symptoms after a double-blinded, placebo-controlled food challenge with soy.
- In 1993, Ragno et al. reported that no child with CMA had symptoms after a food challenge with soy.

Use of SPFs for the Prevention of CMA

- In 1953, Glaser et al. reported that SPFs given to atopic, allergy-prone babies prevented the onset of allergic diseases, mainly eczema.
- In 1966, Johnstone et al. conducted a long-term clinical trial and reported that allergic diseases had developed in 18% of the soy group and in 50% of the control group; the difference was statistically significant.
- In 1969, Brown et al. contradicted these findings: allergy occurred in 10% of the children in the soy group and in 13% of the children in the control group, but the difference was not statistically significant.
Advantages of SPFs

- Nutritionally similar to cow-milk formulas.
- Lactose free.
- Lower immunogenicity than cow-milk formulas.
- Lower allergenicity than cow-milk formulas.
- No cross-reactivity with cow-milk protein.
- Better palatability than hydrolyzed formula.
- Less expensive than hydrolyzed formula.

Disadvantages of SPFs

- Antigenicity may be greater than that of cow-milk formulas.
  - In 1988, Wilson et al. reported that “Approximately 25% of patients with CMA are also allergic to soy. In addition, soy protein are irritating to the gastrointestinal tract of some infants, especially during or after an acute episode of gastroenteritis.”
Conclusions

- Field of soy allergy is fraught with confusion.
- Most studies lack scientific criteria for diagnosing soy allergy.
  - Non-specific symptoms such as diarrhea, vomiting, colic, and irritability are incorrectly identified as resulting from soy allergy, without any objective confirmation.
- Many studies misinterpret conclusions of previous studies.
- Need more studies based on double-blind, placebo-controlled, oral food challenges to soy.

References

References (cont.)


References (cont.)