

cell count more than 5,000/mm<sup>3</sup>; (vii) glucose less than 20 mg/dl; and (viii) organism identified by Gram's stain and/or by culture. Other factors like young age, pneumococcus as causal organism and cell count in CSF less than 1000/mm<sup>3</sup> also has been linked with bad prognosis(5).

Relatively acellular CSF and significant change in differential count, should alert the treating physician in the diagnosis and management of a case of pyogenic meningitis.

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#### REFERENCES

1. Feigin RD. Bacterial Infections. In: Nelson Textbook of Pediatrics, 12th edn. Eds Behrman RE, Vaughan VC. Philadelphia, WB Saunders Co, 1983, pp 638-641.
2. Dyken P. Laboratory examination of spinal fluid. In: Practice of Pediatric Neurology (Eds) Swaiman KF, St. Louis, Wright ES. The CV Mosby Co, 1982, pp 81-89.
3. Vincent J, Hakim KA, Sainaba MK, Rajagopalan KC. Diagnostic significance of neutrophils in CSF in meningitis without overt pleocytosis. Indian Pediatr 1987, 24: 240-242.
4. Bhat BV, Verma IC, Puri RK, Srinivasan S, Nalini P. Prognostic indicators in pyogenic meningitis. Indian Pediatr 1987, 24: 977-983.
5. Kumar L, Satyanarayan C, Ayyagari A. The current status of pyogenic meningitis in children. Indian Pediatr 1980, 17: 438-444.

## Is Preterm Milk Tailored to the Needs of a Preterm Infant?

The controversy of what is the ideal food for a preterm infant will probably rage on till the long term effects of nutrition in this critical period of life are accurately known. In the recent article, Saini *et al.*(1) have raised the question "Is preterm milk tailored to the needs of a preterm infant?". They have suggested that barring certain nutrients, perhaps it is. This is in contradiction to a recent report by Kashyap *et al.*(2). This report suggests that preterm infants fed fortified formula grow at rates faster than the fetus *in utero*. They achieved this by either increasing the protein content of the formula or the caloric content. The former was associated with elevated concentrations of plasma amino acids and the latter with increased deposition of fat. The long term effects of either in terms of brain growth, neurodevelopment or later predisposition to obesity are not known. On the other hand Jarvenpaa *et al.*(3) have shown that preterm human milk supports adequate growth. However, in their study, the babies had developed low serum albumin levels at the end of the study period.

Many studies(4,5) have prevented hypoalbuminemia by supplementing preterm milk with human milk protein with or without human milk fat. They have all shown better nitrogen retention and optimal growth following such supplementation. A preparation of human milk protein is, however, not available. Nor do any of the commercially available milk powders contain protein akin to human milk protein. Hence till such a preparation, or a practical substi-

tute is available, the opinion of Saini *et al.*(1) will probably hold true for developing countries; where the non-nutritional advantages of breast milk are just as important for the preterm infant.

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## REFERENCES

1. Saini AS, Lal H, Agarwal SK, Kaur J. Human milk in infant nutrition. *Indian Pediatr* 1990, 27: 681-702.
2. Kashyap S, Schulze KF, Forsyth M, *et al.* Growth nutrient retention and metabolic response in low birth weight infants fed varying intake of protein and energy. *J Pediatr* 1988, 113: 713-721.
3. Jarvenpaa AL, Raiha NCR, Rassin DK, Gaull GE. Preterm infants fed human milk attain intrauterine weight gain. *Acta Pediatr Scand* 1983, 72: 239-243.
4. Schanler RJ, Garza C, Nichols BL. Fortified mother's milk for very low birth weight infants: Results of growth and nutrient balance studies. *J Pediatr* 1985, 107: 437-445.
5. Ronnholm KAR, Perheentupa J, Siimes M. Supplementation with human milk protein improves growth of small premature infants fed human milk. *Pediatrics* 1986, 77: 649-653.

## Reply

In growing individuals, by lowering protein intake below a particular level, it is not possible to support their positive nitrogen balance. Thus the lower limit of protein in-

take is not difficult to define. As far as the upper limit is concerned, ambiguity will always exist if rate of growth is the only parameter used to define protein requirement since it is difficult to define the best rate of growth. A higher growth rate may not always be a physiologically better growth rate(1). The problem is still more complicated as far as preterm babies are concerned in whom the metabolic machinery as well as the renal excretory processes may not be appropriately mature. Thus while adventuring to exceed intrauterine growth rate in the preterm, we should not forget the advantageous position of the fetus over the preterm who is totally on his own. Kashyap *et al.*(2) are quite aware of this and have therefore added—“Nonetheless, the effects of protein intake during the neonatal period on both neonatal well-being and subsequent developmental outcome must be studied more thoroughly before stating definitively that the higher protein intake studied is safe as well as desirable with respect to growth.”

In the other two studies(3,4), comparison has been done between pooled mature milk and its fortified version or between fortified mature milk and formula milk. Addition of protein to mature milk for feeding the preterm is not contested since mature milk contains less protein than preterm milk.

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## REFERENCES

1. Schesfer O. Faltering growth and human milk. *Lancet*, 1981, i: 101.