

Concurrent Session 6: Evidence Based Nutrition

Evidence based nutrition: a perinatal experience involving long chain polyunsaturated fatty acids

M Makrides

Child Health Research Institute, North Adelaide, SA 5006

Background – The process of evidence based practice involves a lengthy cycle of research, systematic review of all relevant data, implementation of the research/systematic review findings, evaluation, and modification of the implementation or more research, which ever is required. However in practice, this cycle is not always apparent.

Objective – The aim of this paper is to examine the process of the evidence-based cycle in the research process and the translation of data relating to omega-3 long chain polyunsaturated fatty acid (LCPUFA) requirements in the perinatal period.

Results from studies involving infants – Initial trials were designed to test the efficacy of supplementing infant formulas for preterm and term infants with omega-3 LCPUFA. These trials were relatively small in size, of variable duration and used doses that ranged from 0.1 to 1% of total dietary fat. Outcomes have tended to range from simple LCPUFA status to more complex visual and cognitive outcomes. Despite the large number of studies now in the literature it has been difficult to bring all the data together in a satisfactory way in to systematic reviews because of the wide range in methodology, the differing trial protocols and the assessment methods used as outcomes. Nevertheless, the individual studies have been suggestive of a developmental benefit and this has been most consistent in infants born preterm. As a consequence infant formulas for preterm infants and many for term infants are supplemented with omega-3 LCPUFA. However, point of controversy has been the dose and the ratio of omega-3 to omega-6 LCPUFA supplementation. Our systematic review relating to the effects of LCPUFA supplementation of infant formulas on growth has addressed part of this controversy (1), but discussion remains.

Results from studies with pregnant women – On the other hand trials designed to test the effect of dietary omega-3 LCPUFA on pregnancy outcomes have generally been larger and have used higher doses of marine oils. As the outcomes have been very specific (pregnancy outcomes) we have a good body of work that has enabled trials to be combined in systematic reviews that have given us a clear idea of the safety and efficacy of omega-3 LCPUFA in pregnancy (2). In summary, we now know that up to 3 grams of fish oil per day in pregnancy is safe, but that there is not enough evidence to support the routine use of marine oil, or other prostaglandin precursor, supplements during pregnancy to reduce the risk of pre-eclampsia, preterm birth, low birthweight or small-for-gestational age. Very few of these trials have satisfactorily followed the effects on the growth and the development of the resulting children. In the prenatal supplementation area it has been possible to commence the next phase trials, which are focussed on maternal well-being and the development of the children, with confidence.

References

- 1 Makrides M, Gibson RA, Udell T, Ried K and the International LCPUFA Investigators. LCPUFA supplementation of infant formula does not influence the growth of term infants. *Am J Clin Nutr* 2005;81:1094-1101
- 2 Makrides M, Duley L, Olsen SF. Marine oil, and other prostaglandin precursor, supplementation for pregnancy uncomplicated by pre-eclampsia or intrauterine growth restriction. In: *The Cochrane Database of Systematic Reviews* 2006 Jul 19;3:CD003402