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ASPEN Clinical Nutrition Week 2012
“Lipid Reduction Strategies to Prevent or Treat Parenteral Nutrition Associated Liver Disease”
Monday, January 23rd, 2012, 1:30pm-3:00pm

A major problem with long-term use of parenteral nutrition (PN) in neonatal and pediatric patients is the development of parenteral nutrition associated liver disease (PNALD). The FDA-approved lipid emulsion component of PN in the United States is derived from soy-bean oil. Unfortunately, soybean-based lipid emulsions, which are typically administered at a dosage of 2-3 g/kg/day in infants and pediatric patients, have been thought to be a contributing factor to the pathogenesis of PNALD. This session will discuss the use of lipid reduction strategies to prevent and/or treat PNALD. Special attention will be given to adjustments to nutrition delivery needed to compensate for the reduction in calories from lipid emulsions, monitoring parameters required with the use of lipid reduction, and comparison to the use of fish-oil based lipid emulsions currently under investigational use.

Learning Objectives:

At the conclusion of this presentation, the learner will be able to:

- 1) Describe the PNALD and the proposed link between soy-bean based lipid emulsions and PNALD.
- 2) Outline a lipid reduction strategy for specific pediatric patient populations and monitoring parameters for this strategy.
- 3) Compare the use of lipid reduction strategies and the use of fish-oil based lipid emulsions for the prevention and treatment of PNALD.

Learning Assessment Questions:

- 1) The theoretical basis for lipid reduction in the prevention and treatment of PNALD is partially related to which of the following?
 - a) Decrease in overfeeding of pediatric patients
 - b) Increase in omega-3 fatty acids
 - c) **Decrease in phytosterols administration**
- 2) The primary mechanism to compensate for calories lost due to lipid reduction strategies includes which of the following:
 - a) Increased provision of amino acids in the parenteral nutrition
 - b) **Increased provision of carbohydrates in the parenteral nutrition**
 - c) Both a and b
- 3) Patients currently on a lipid reduction strategy to prevent/treat PNALD are at risk for?
 - a) **Essential fatty acid deficiency**
 - b) Vitamin A deficiency
 - c) Increase in omega-6 fatty acids

References:

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- de Meijer VE, Gura KM, Meisel JA, Le HD, et al. Parenteral fish oil monotherapy in the management of patients with parenteral nutrition-associated liver disease. *Arch Surg.* 2010 Jun;145(6):547-51.
- Gura KM, Lee S, Valim C, Zhou J, et al. Safety and efficacy of a fish-oil-based fat emulsion in the treatment of parenteral nutrition-associated liver disease. *Pediatrics.* 2008 Mar;121(3):e678-86.
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