

***Safety and Efficacy of Fish Oil-Enriched Parenteral Nutrition Regimen on Postoperative Patients Undergoing Major Abdominal Surgery: A Meta Analysis of Randomized Controlled Trials***

Journal of Parenteral and Enteral Nutrition, Vol. 34. No 4, July 2010 387-394.

***Background***

This study was designed to evaluate the safety and efficacy of a fish oil-enriched parenteral nutrition regimen in patients undergoing major abdominal surgery. Currently, conventional soybean fat emulsions are used in parenteral nutrition. The high content of omega 6 PUFA's may lead to the generation and accumulation of linoleic acid and arachidonic acid, exerting proinflammatory and anti-inflammatory effects. However, fish oils have been identified as a suitable source of long-chain omega-3 PUFAs can maintain better membrane fatty acyl balance and play an important role in suppressing the hyperinflammatory responses associated with many serious diseases. Several clinical trials have tested fish oil enriched parenteral nutrition (PN) regimens that could modulate the production of proinflammatory cytokines, improve the course of infections, and restore liver function.

***Methods***

This was a Meta-Analysis of randomized control trials. Electronic databases were searched for patients undergoing major abdominal surgery. The trials compared standard PN with PN supplemented with FO. Clinical safety variables included the incidence rate of cardiac complications and serum levels of liver enzymes, bilirubin, and triglycerides on postoperative day 6. The efficacy variables were mortality, postoperative infection rate, length of hospital and ICU stays, PUFA levels in plasma phospholipids, and plasma alpha tocopherol levels on POD 6.

***Major Results Reported by the Authors***

Combined results showed that an FO enriched PN regimens had a positive treatment effect on length of hospital stay, length of ICU stay, and post operative infection rate. Results also showed that the use of FO enriched PN improved serum concentrations of liver enzymes on POD 6.

***For Discussion***

Analysis of the trials did not show improvements in postoperative mortality rate and some laboratory test results in these patients. Due to incomplete data, the authors did not bring other clinical laboratory tests (ie cholesterol, serum glucose) into discussion. They also did not look at studies related to the safety and efficacy of FO emulsions.

***Conclusions***

Continued research is required to show the risks and benefits of using FO enhanced lipid emulsions.