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Title: Intravenous omega-3 fatty acids are associated with better clinical outcome and less inflammation in patients with predicted severe acute pancreatitis:A randomised double blind controlled trial

Article Type: Randomized Control Trials

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Abstract: Background and Aims
Omega-3 fatty acids (FA) can ameliorate the hyper-inflammatory response that occurs in conditions such as severe acute pancreatitis (SAP) and this may improve clinical outcome. We tested the hypothesis that parenteral omega-3 FA from a lipid emulsion that includes fish oil could be beneficial in patients with predicted SAP by reducing C-reactive protein (CRP) concentration (primary outcome), and modulating the inflammatory response and improving clinical outcome (secondary outcomes).

Methods
In a phase II randomized double-blind single-centre controlled trial, patients with predicted SAP were randomised to receive a daily infusion of fish oil containing lipid emulsion (Lipidem® 20%, BBraun) for 7 days (n=23) or a daily infusion of a lipid emulsion without fish oil (Lipofundin® MCT 20%, BBraun) (n=22).

Results
On admission, both groups had comparable pancreatitis predicted severity and APACHE II scores. Administration of fish oil resulted in lower total blood leukocyte number (P=0.04), CRP (P=0.013), interleukin-8 (P=0.05) and intercellular adhesion molecule 1 (P=0.01) concentrations, multiple organ dysfunction score, sequential organ failure assessment score (P=0.004), early warning score (P=0.01), and systemic inflammatory response syndrome (P=0.03) compared to the control group. The fish oil group had fewer new organ failures (P=0.07), lower critical care admission rate (P=0.06)., shorter critical care stay (P=0.03) and shorter total hospital stay (P=0.04).

Conclusions
It is concluded that intravenous administration of a fish oil containing lipid emulsion, a source of omega-3 FA, improves clinical outcomes in patients with predicted SAP, benefits that may be linked to reduced inflammation