Influence of Different Fat Emulsions with 10 or 20% MCT/LCT or LCT on Lipoproteins in Plasma of Patients after Abdominal Surgery

Abstract:
In patients after elective abdominal surgery, different fat emulsions were used to compare their efficacy in total parenteral nutrition and in normalizing plasma lipoprotein levels. In five different groups with 5 patients each, half of the nonprotein calories were given as medium-chain triglycerides/long-chain triglycerides (1:1) or as long-chain triglycerides alone in 10 or 20% fat emulsions or as glucose alone in a control group for 7 days. After surgery, an initial decrease of all plasma lipoprotein components was followed by a different behavior of glyceride-glycerol, cholesterol, phospholipids, and apolipoproteins. Glyceride-glycerol in very-low-density lipoproteins and high-density lipoproteins is increasing during infusion of fat emulsions and decreasing during overnight interruption of infusions. After the 7-day infusion period, there was no significant difference in very-low-density lipoprotein glyceride-glycerol as compared with the values before different infusions. Low-density lipoprotein cholesterol is reaching and exceeding preoperative concentrations between the 4th and the 7th day, most during infusion of 10% fat emulsion and especially due to an increase of free cholesterol. High-density lipoprotein cholesterol and apolipoprotein A-I reach preoperative levels during infusion of fat emulsions but not with glucose alone. Higher than preoperative
values are reached in phospholipids with all fat infusions already on day 4. Abnormal lipoprotein X occurred least with the medium-chain/long-chain triglyceride 20% fat-infusion. This fat emulsion is suggested as having the best normalizing effect on plasma lipoproteins and best tolerance in patients after surgery.

Stichworte: Fat emulsions; Long-chain triglycerides; Medium-chain triglycerides; Plasma lipoproteins

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