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The Effects of Intravenous Glutamine on Bacterial Translocation and Intestinal Morphology in
Experimental Pancreatitis

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Abstract: Aim: The aim of this study was to investigate the effects of intravenous glutamine administration on bacterial translocation and intestinal morphology in rats with induced acute pancreatitis. Materials and Methods: Forty-eight Wistar-Albino rats were divided into four groups (n = 12 for each group). Pancreatitis was induced with ligation of the main pancreatic duct except in the sham group, in which only periportal dissection was performed. Rats in the sham and control groups were exposed to standard rat pellet. Total parenteral nutrition (TPN) was administered solely to the pancreatitis + TPN group and together with glutamine (Gln) to the pancreatitis + TPN + Gln group. Rats were sacrificed at 48 h after experiment. Venous blood was obtained for blood culture and biochemistry. Tissue samples were obtained from liver, spleen, pancreas and lymph nodes from the mesentery for bacterial culture. Histopathologic examination was performed on tissue sections obtained from the pancreas. Results: Formation of pancreatitis was demonstrated on microscopic examination. Amylase levels were significantly increased in pancreatitis-induced groups when compared to the sham group (P < 0.05). Bacterial translocation was observed in 1 rat (8%) in the sham group, in 7 rats (58%) in controls, in 8 rats (67%) in the pancreatitis + TPN group and in 3 rats (25%) in the pancreatitis + TPN + Gln group. Villus heights and numbers were significantly increased in TPN-administered groups compared to controls. Conclusions: As Gln supplement in TPN treatment reduced the bacterial translocation and stimulated intestinal cell division and replication during the severe pancreatitis model, we suggest that application of Gln into TPN solutions can reduce possible septic complications associated with pancreatitis.

Key Words: Acute pancreatitis, bacterial translocation, glutamine, total parenteral nutrition, experimental surgery

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