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The Effect of Erythropoietin in Acute Pancreatitis: An Experimental Study

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Abstract: Background: Although the pathogenesis of acute pancreatitis is not clearly known, the most frequently mentioned factors are proinflammatory cytokines and nitric oxide (NO), which is stimulated by bacterial endotoxins. The relationship of erythropoietin (EPO), which is an erythroid line growth hormone, with proinflammatory cytokines and NO is also not clear. EPO has a well-known general tissue protective effect, yet its role in an inflammatory presentation like that of acute pancreatitis has not been investigated and documented. Therefore, the aim of this study was to investigate the role of EPO in acute pancreatitis. Materials and Methods: 60 Wistar Albino rats were divided into 4 groups as follows: laparotomy (I), pancreatitis (II), pancreatitis + simultaneous application of EPO (III) and finally pancreatitis + administration of EPO after 3 hours (IV). The groups were further separated to subgroups by sacrificing the animals at 3, 6 and 24 hours. Pancreatitis was induced by injecting 4.5% sodium (Na)-taurocholate (0.1 ml / 100 g) into the pancreatic canal. Leukocyte counts and serum amylase and C-reactive protein (CRP) levels were measured. Histopathological changes of the pancreas were evaluated according to Spormann scores. Results: EPO was shown to increase leukocyte counts in the early phase ($P < 0.05$) though the effect diminished in time. It also had an increasing effect on amylase in the early hours ($P < 0.005$), but the difference between the groups disappeared in the following hours. No effect was demonstrated on serum CRP. Pancreatic tissue revealed moderate degree of pancreatitis in group III sacrificed at 6 hours and in group IV evaluated at 6 and 24 hours. Despite the absence of a difference in the numerical analysis of Spormann scoring ($P > 0.05$), moderate pancreatitis developed in the group receiving EPO. Conclusions: The results we have obtained demonstrate that more controlled models (employing low rates of sodium taurocholate or edematous pancreatitis) are necessary to better investigate the efficacy of EPO.

Key Words: Acute pancreatitis, experimental model, histopathology, erythropoietin

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