

The assessment of cytokines and morphological state of pancreas in experimental acute necrotizing pancreatitis treated with Perfluorocarbon Emulsions

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Аспирант

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Introduction: The cause of death in most patients with acute necrotizing pancreatitis (ANP) is often the result of multi organ failure that develops due to systemic inflammatory response syndrome (SIRS). The systemic manifestations of acute pancreatitis is due to the local and systemic actions of specific cytokines.

Aim: The aim of this study is to investigate the effects of Perftoran - the Russian preparation of the group of Perfluorocarbon (PFC) emulsions on cytokine cascades and the morphological state of pancreas in ANP.

Materials & methods: Rats were divided into 3 groups, the 1st group included rats with surgically Modeled ANP (upper-median laparotomy with a 1.5 minute cold exposure of the splenic segment of the pancreas), the 2nd group included rats with perftoran administered intraperitoneally at a dose of 0.5ml per 100g for a period of 5 days after surgically induced ANP the 3rd group included intact rats. Key parameters evaluated: cytokines - tumor necrosis factor -alpha (TNF-alpha), interleukin -4 (IL- 4), nuclear area, as well as morphological criteria - cytoplasmic area and nuclear-cytoplasmic ratio of acinar cells. Data were recorded on 1st, 3rd, 7th, & 14th day. The duration of the experiment was 14 days.

Results: In the 2nd group there was a fast and pronounced reduction in the level of pro-inflammatory cytokines TNF-alpha to almost normal by the 14th day and an early activation of anti-inflammatory cytokines IL-4 compared to the 1st group. This dynamics correlates with the dynamics of morphometric parameters: on the 14th day there was total normalization in the 2nd group, while the nucleus and the nuclear-cytoplasmic ratio remains higher than normal in the 1st group, which implies incomplete regenerative process in the 1st group by the 14th day.

Conclusion: The experiment demonstrates PFC are suitable for use in the treatment of ANP.

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