Abstract

Background. Monofluorophosphate (MFP) binds to plasma alpha-macroglobulins modifying their structure and antiproteasic activity. The latter is required during pancreatitis, when proteinases are released by the damaged tissue. Previously, it was demonstrated that the treatment with MFP increases the survival of rats with experimental pancreatitis. Methods. In this work, the pancreatic damage was quantified through a numerical score evaluating edema, fibrin deposits, neutrophils and mononuclear cells infiltration, necrosis, congestive blood vessels, hemorrhage, vascular thrombosis, and fibrosis in rats with pancreatitis and under treatment with MFP. Ten male Sprague-Dawley rats per group were used: group A: treatment with MFP 30 days before pancreatitis, control A: treatment with vehicle, 30 days before pancreatitis; group B: treatment with MFP for 14 days after pancreatitis; control B: treatment with vehicle for 14 days after pancreatitis, group Sham: rats with simulated surgery. Surviving rats were euthanized after 14 days of the induction of pancreatitis. The score was measured by light microscopy analysis and comparisons were done with One Way ANOVA. The percentage of survival was evaluated by Kaplan-Meier. The score (mean±SEM) and the percentage of survival were considered different with a P < 0.05. Results. Group A: score 8.6±2.3 (NS vs control A), survival 70% (P<0.05 vs. control A); control A: score 11.0±2.2, survival 40%; group B: score 1.7±0.9 (P < 0.05 vs. control B), survival 40% (NS vs. control B)); control B: score 7.0±4.0, survival 40%; group Sham: score 5.3±1.3, survival 100%. Conclusions. The treatment with MFP before pancreatitis increased survival without differences in pancreatic damage. The administration of MFP after pancreatitis decreased tissular damage without differences in survival. The treatment of rats with MFP before or after the induction of pancreatitis would improve morbi-mortality.

Keywords

Monofluorophosphate, MFP, macroglobulin, pancreatitis, rats.