World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:18, No:09, 2024

STAT6 Mediates Local and Systemic Fibrosis and Type Ii Immune Response via Macrophage Polarization during Acute and Chronic Pancreatitis in Murine Model

Authors : Hager Elsheikh, Matthias Sendler, Juliana Glaubnitz

Abstract : In pancreatitis, an inflammatory reaction occurs in the pancreatic secretory cells due to premature activation of proteases, leading to pancreatic self-digestion and necrotic cell death of acinar cells. Acute pancreatitis in patients is characterized by a severe immune reaction that could lead to serious complications, such as organ failure or septic shock, if left untreated. Chronic pancreatitis is a recurrence of episodes of acute pancreatitis resulting in a fibro-inflammatory immune response, in which the type 2 immune response is primarily driven by AAMs in the pancreas. One of the most important signaling pathways for M2 macrophage activation is the IL-4/STAT6 pathway. Pancreatic fibrosis is induced by the hyperactivation of pancreatic stellate cells by dysregulation in the inflammatory response, leading to further damage, autodigestion and possibly necrosis of pancreatic acinar cells. The aim of this research is to investigate the effect of STAT6 knockout in disease severity and development of fibrosis wound healing in the presence of different macrophage populations, regulated by the type 2 immune response, after inducing chronic and/or acute pancreatitis in mice models via cerulean injection. We further investigate the influence of the JAK/STAT6 signaling pathway on the balance of fibrosis and regeneration in STAT6 deficient and wild-type mice. The characterization of resident and recruited macrophages will provide insight into the influence of the JAK/STAT6 signaling pathway on infiltrating cells and, ultimately, tissue fibrosis and disease severity.

Keywords : acute and chronic pancreatitis, tissue regeneration, macrophage polarization, Gastroenterology
Conference Title : ICOPC 2024 : International Conference on Obesity and Pancreatic Cancer
Conference Location : San Francisco, United States
Conference Dates : September 26-27, 2024