Exosomes in the treatment of pancreatic adenocarcinoma

Horacio Rilo
North Shore LIJ Health Systems, Hofstra University, USA

Pancreatic cancer (PaCa) is one of the most aggressive and lethal malignancies, with an annual incidence and mortality rate that is nearly identical. It is considered one of the deadliest cancers and ranks fourth in cancer related mortality. Poor prognosis for PaCa is primarily attributed to late detection and early metastasis. These cancers respond poorly to chemotherapy and radiation, and surgical resection remains the standard treatment. Unfortunately, the 5-year survival rate for the earliest form of PaCa (Stage IA) is 14% and only 1% for Stage IV. PaCa diagnosis currently involves endoscopy, cross-sectional imaging and cytological examination of pancreatic fluid, methods that are either invasive or expensive. Diagnostic tests that are sensitive, specific, and capable of early diagnosis are needed and could significantly improve pancreatic cancer treatment and outcomes. Recently, exosomes, extracellular vesicles containing microRNAs (miRNAs), mRNA, and protein, have been used as pancreatic cancer markers. miRNAs are non-coding RNAs that play a role in the regulation of post-transcriptional gene expression. Importantly, the miRNA expression profile of tumor-derived serum exosomes in PaCa patients differs significantly from those of healthy people as well as those with non-malignant disease. Further, it is thought that patients suffering from cancer have exponentially higher numbers of circulating exosomes since they are secreted in large amounts during carcinogenesis. Finally, exosomes released from tumor cells are readily detected in body fluids, thereby providing a potentially non-invasive diagnostic tool that would enable the earlier diagnosis of pancreatic cancer and potential improvement of outcomes.

Biography

Horacio Rilo is a Professor of Surgery at Hofstra University and Director of the Pancreas Disease Center at North Shore LIJ Health Systems in New York. His research focuses is translational medicine with a specific emphasis on cellular therapy for pancreatic diseases. Rilo has one of the largest world experiences in islet cell transplantation for the treatment of unremitting pancreatitis and Type 1 Diabetes.

hrilo@nshs.edu