Procurement of the human pancreas regulates the expression of tissue factor in human islets and determines the outcome of clinical islet transplantation

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Background: To further increase the success rate of clinical islet transplantation analysis of the impact of donor- and process- related factors could be of great importance. Human pancreases were retrieved from organ donors applying no other exclusion than usually applied for kidney donors.

Methods: One hundred standardized consecutive islet isolations, of which 40 were used for clinical islet transplantations, were evaluated. Both univariate and multivariate regression analysis donor- and process- related variables were correlated to the possibility to proceed to clinical transplantation and to the increment in C-peptide/(creatinine x B-glucose) of the recipients 2 weeks after transplantation.

Results: The univariate analyses showed that TF expression in the pancreatic biopsies had significantly negative impact on the increment in C-peptide ratio at 2 weeks after transplantation. TF expression in the pancreatic tissues was significantly associated with semi-WIT (defined as the time from cross-clamp of the aorta to the time of placing pancreata into the ice box). TF expression in the pancreatic biopsies was closely associated with the expression of other inflammatory mediators such as IL-8, MCP-1, ICAM-1, and IP-10. In addition, TF expression in the pancreatic tissues was also positively correlated with maximal TAT (thrombin-antithrombin) in the recipients at the time of islet transplantation. Donor age, donor BMI, use of catecholamines, maximal

amylase, cause of death, procurement team (local/distal) were not associated with the clinical outcome.

Conclusions: The success rate of human islet isolation and clinical transplantation is strongly correlated to pancreas procurement factors. TF expression in the pancreas at the time of arrival to the islet isolation facility seems to determine the clinical outcome by regulating IBMIR. Many of these adverse factors determining clinical outcome would most likely be possible to reverse by optimal management of the donor.