Islets of Langerhans Are Protected from Inflammatory Cell Recruitment during Reperfusion of Rat Pancreas Grafts

Title:

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Abstract:

Background: Ischemia/reperfusion (I/R) injury plays a pivotal role in the development of graft pancreatitis, with ischemia time representing one of its crucial factors. However, it is unclear, whether exocrine and endocrine tissue experience similar inflammatory responses during pancreas transplantation (PTx). This study evaluated inflammatory susceptibilities of islets of Langerhans (ILH) and exocrine tissue after different preservation periods during early reperfusion.

Methods: PTx was performed in rats following 2 h (2h-I) or 18 h (18h-I) preservation. Leukocyte-endothelial cell interactions (LEI) were analyzed in venules of acinar tissue and ILH in vivo over 2 h reperfusion. Nontransplanted animals served as controls.

Results: In exocrine venules leukocyte rolling predominated in the 2h-I group. In the 18h-I group, additionally, high numbers of adherent leukocytes were found. Histology revealed significant edema formation and leukocyte extravasation in the 18h-I group. Notably, LEI in postcapillary venules of ILH were significantly lower. Leukocyte rolling was only moderately enhanced and few leukocytes were found adherent. Histology revealed minor leukocyte extravasation.

Conclusion: Ischemia time contributes decisively to the extent of the I/R-injury in PTx. However, ILH have a significantly lower susceptibility towards I/R, even
when inflammatory reactions in adjacent exocrine tissue are evident.

Stichworte:
- Pancreas transplantation
- Microcirculation
- Leukocytes
- Islets of Langerhans
- Ischemia/reperfusion

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