#394 - Mehta 2018

Normothermic regional perfusion rescues ischaemic injury to the biliary tract and reduces ischaemic cholangiopathy in DCD liver transplants

Mehta M.1, Harrison D.J.2, Wigmore S.J.1,3, Oniscu G.C.1,3

1University of Edinburgh, Edinburgh, United Kingdom, 2University of St. Andrews, St. Andrews, United Kingdom, 3Scottish Liver Transplant Unit, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

Introduction: Ischemic cholangiopathy (IC) is a major complication of liver transplantation from donors after circulatory death (DCD). Normothermic regional perfusion (NRP) appears to reduce the incidence of IC. We investigated if histological changes seen in the biliary tree immediately post-reperfusion might herald the development of IC.

Methods: Two independent observers undertook a systematic analysis of donor gall bladder (GB) and common bile duct (CBD) to assess for differences in histological phenotype between (a)NRP and non-NRP cases and (b)recipients who developed IC and those who did not. H&E stained tissue samples of donor GB and CBD were scored according to a grading system published by Hansen *et al*. MRCP/ERCP diagnosis of IC was the primary outcome measure. Independent samples Mann-Whitney U tests were performed to assess for differences in histological scores between groups.

Results: 50 cases (38 DCD, 12 DCD-NRP) were studied. Eleven recipients (all standard DCD) developed radiologically confirmed IC (median follow-up:30.5 months).

There were significantly less histological injuries in donor GB in the

NRP group [mucosal loss (p< 0.0005), mural necrosis (p=0.033), arteriolonecrosis (p=0.023) and total injury (p< 0.0005)]. These differences persisted when comparing NRP with non-NRP transplants who did not develop IC. No differences reach statistical significance for donor CBD analysis.

There was no significant difference in the tissue injury scores between the IC and non-IC groups in the full cohort and in the standard DCD(non-NRP) subgroup analysis.

Discussion: The histological scores indicate that NRP ameliorates the ischaemic injury to cholangiocytes. However, ischaemia-related histological changes at the time of reperfusion did not correlate with the development of IC post-transplant, indicating that one or more complementary mechanisms are likely involved. A histological grading scale based on ischaemic injury alone may not be adequate to predict the development of IC.

	IC	Non-IC	*Total*
NRP	**0** (0.0%)	**12** (100%)	**12**
non-NRP	**11** (28.9%)	**27** (71.1%)	**38**
Total	**11**	**39**	**N=50 cases**

[*Fisher's exact test; p=0.46***]