

The Viability of Liver Graft for Transplantation After Prolonged Warm Ischaemia

H S Ong,^{*MBBS, FRCS (Edin)}, K C Soo,^{**FAMS, MD, FRACS}, V T Joseph,^{***FAMS, FRACS, FRCS (Edin)},
S Y Tan,^{****MBBS}, P R Jeyaraj,^{†FAMS, M Med (Surg), FRCS (Edin)}

Abstract

Maximum duration of warm ischaemia within which the liver graft is viable for transplantation remains undefined. Published data on porcine allogeneic liver transplantation (LTx) using non heart beating donors (NHBDs) are conflicting because technical details like the hepatic artery status, systemic heparinisation of donor animals and duration of rewarming were not addressed. We described a novel porcine model which simulate conditions of transplantation from NHBDs. The pigs were divided into three groups of 6 each. Groups I, II and III were subjected to 60, 90 and 120 minutes of warm ischaemia, respectively. Liver viability was assessed using four parameters: serum liver function tests (serum bilirubin and transaminase), dynamic liver function test i.e. the monoethylglycinexylidide (MEGX) formation test, morphological assessment and animal survival. All animals in groups I and II (90 minutes of warm ischaemia or less) survived but 50% of animals in group III died of massive liver failure. Given that rewarming period required in actual allogeneic LTx is about 60 minutes, the safe period for intervention in NHBDs is determined to be about 30 minutes. Allogeneic porcine LTx using NHBDs with 30 minutes of cardiac arrest were performed in 5 animals. All of them survived.

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