Methods: We have analyzed donor bile ducts taken 1 hour after portal and arterial graft recirculation in order to assess bile duct damage caused by preservation and recirculation. Bile duct tissue specimens of 36 donors were fixed in PBS-buffered formalin and processed according to standard protocols.
Results: Loss of epithelium of the bile duct being complete in 17% was a common feature in all specimens. The majority of cases (87%) showed diffuse transmural bleeding of the bile. Inflammation was generally only sparsely detected. The most remarkable alterations were observed in the arterioles: In 36% of cases, we found damage of the endothelial lining characterized by loss of endothelial cells and sub-endothelial edema. Additionally, 47% of the specimens revealed variable numbers of necrotic arterioles. In these patients, necrotic walls of the bile ducts occurred (with a total number of 20 donors). Vessels with thrombi could be detected in 42% of the specimens.
Conclusions: To our knowledge, this is the first study analyzing the histology of donor bile ducts immediately after recirculation during LT. The most prominent finding was a remarkable vascular damage leading to arteriolonecrosis. Further studies should elucidate if these lesions are caused by inadequate preservation or by natural variations of the blood supply to the bile ducts.

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Non-renal DCD / ECD

O-296 SEPTUAGENARIAN AND OCTAGENARIAN DONORS PROVIDE EXCELLENT LIVER GRAFTS FOR TRANSPLANTATION

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Background: Wider utilization of liver grafts from donors ≥70 yo could substantially expand the donor pool, but their use remains limited by fear of their poor outcome. We examined the results of liver transplantation (LTx) using livers from donors ≥70 yo at our center.
Methods: From February 2003 to August 2010, 450 LTx were performed. Of those 58 (13%) were performed using donors ≥70 yo. Their outcome was compared to that of LTx using donors <70 yo.
Results: Cerebrovascular causes of death predominated in donors ≥70 yo (85% versus 47% in donors <70 yo) (p<0,001) whereas traumatic causes of death predominated in donors <70 yo (36% versus 14% in donors ≥70 yo) (p=0,002). Unlike grafts/donors <70 yo, older grafts/donors had no additional risk factor (steatosis, high sodium, hemodynamic instability). Both groups were comparable for cold and warm ischemia times. No difference was noted in posttransplant peak transaminase, incidence of primary non-function, hepatic artery thrombosis, biliary strictures, and retransplantation between both groups. The 1 and 5-year patient survival were 90% and 80% in recipients of livers <70 yo versus 88% and 80% in recipients of livers ≥70 yo (p=0,74). Recipients of older grafts were 9 years older than recipients of younger grafts (p<0,001) and tended to have a lower laboratory MELD score (p=0,074).
Conclusion: Short and middle-term survival following LTx with donors ≥70 yo can be excellent providing that donors and recipients are adequately selected. Septuagenarian and octogenarian victims of cerebrovascular ischemia and bleeding represent a large pool of potential donors whose wider use could substantially reduce the mortality on the waiting list.

O-297 APPLICABILITY OF DONATION AFTER CARDIAC DEATH LIVER TRANSPLANT USING MAASTRICHT TYPE 2 DONORS

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Unlike Maastricht type 3 donation after cardiac death (DCD) donors, in whom cardiac arrest (CA) is induced by the removal of life support, type 2 donors arrest unexpectedly, typically outside the hospital. These donors have significant potential to expand the donor pool (US Institute of Medicine, 2006).
Aim: Analyze the results of type 2 DCD livers used for transplant as well as all potential liver donors treated under our center's type 2 DCD protocol.
Methods: Cardiac arrest was extrahospitalary. Potential donors arrived with cardiorespiratory support (CRS). Death was declared and femoral vessels canulated to establish normothermic extracorporeal membrane oxygenation (NECMO), which was maintained until organ recovery.
Results: From 4/02 to 12/10, there were 400 activations of our type 2 DCD protocol; 34 liver transplants were performed (9%). Causes for rejecting a type 2 DCD liver were classified as absolute or relative, the latter including a prolonged phase (CA >15 min, CRS >150 min, NECMO > 4 hours), high AST/ALT during NECMO, and poor macroscopic liver aspect at recovery. Overall, 130 livers (33%) were turned down due to relative contraindications.
Among transplanted livers, median follow-up was 24 months (range 0-111). One-year graft and patient survival rates were 71% and 82%, respectively. Ischemic cholangiopathy developed in three patients (8%), who were retransplanted at 5, 8, and 13 months.
Comment: This is largest series of type 2 DCD liver transplants to date. Based on protocol activations, the applicability of type 2 DCD liver transplant was less than 10%. Thirty three percent of livers were turned down based on relative contraindications. It is possible that with better means of preservation *ex vivo*, such as normothermic machine perfusion, we may be able to improve the viability of these grafts and improve the applicability of this procedure.

O-298 LIVER TRANSPLANTATION FROM DONATION AFTER CARDIOCIRCULATORY DEATH (DCD) DONORS: BELGIAN EXPERIENCE 2003-2009

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Introduction: The Belgian experience with DCD liver transplantation (LT) was retrospectively updated with the aim to evaluate patient and graft survivals, and biliary complications.
Patients and methods: From 2003 to 2009, 111 DCD-LTs have been performed in Belgium. The characteristics of donors, recipients, transplantation procedure and outcomes were retrospectively reviewed.
Results: Mean donor age was 47.6±15.5 years (range: 13-79). Donor causes of death were anoxia (26.1%), head trauma (31.5%), stroke (36%) and euthanasia (5.4%). Mean duration of treatment withdrawal to aortic cold perfusion was 24.4±13 min, mean cold ischemia time (CIT) was 367.3±128.9 min. Mean recipient age was 55.9±11.2 years (range: 10-73). The most frequent indications for LT were cirrhosis (49.5%) and hepatocellular carcinoma (39.6%). The rate of primary non function was 4.5%. Overall patient and graft survival was 88% and 80% at 1 year, 75% and 65% at 3 years, respectively. Thirty-seven patients (33.3%) developed biliary complications with the need for endoscopic or surgical management in twenty-eight and retransplantation in seven. In univariate analysis, HU indication, younger donor age, elevated donor bilirubin level, absence of heparin administration to the donor, CIT, secondary WIT (liver implantation), were significantly (p<0.05) associated with transplant failure. Risk factors for biliary complications were short donor ICU stay, elevated donor bilirubin level, long duration between switch off to cold perfusion, long CIT, while local allocation decreased the risk. In multivariate analysis, elevated donor bilirubin level and duration of donor hepatectomy were associated with transplant failure while higher donor bilirubin level, CIT and Meld score were associated with occurrence of biliary complications.
Conclusions: In an era of organ shortage, DCD transplantation is a valuable treatment option with an adequate selection of donors and recipients.

O-299 ISCHEMIC CHOLANGIOPATHY IN LIVER TRANSPLANTATION USING DONATION AFTER CARDIAC DEATH DONORS: ANALYSIS OF A MATCHED CONTROL STUDY IN A SINGLE LARGE VOLUME CENTER

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Background: Shortage of available organs is a limiting factor in liver transplantation (LT). The use of donors after cardiac death (DCD) offers potentials to increase the organ pool. The early results with DCD liver grafts were associated with a greater incidence of non-anastomotic biliary complications, leading to several programs to abandoning this source of organs. The UNOS data