Novel miRNA Profiling as a Biomarker to Predict Ischemic Cholangiopathy and Graft Loss in Donation after Circulatory Death (DCD) Liver Transplantation

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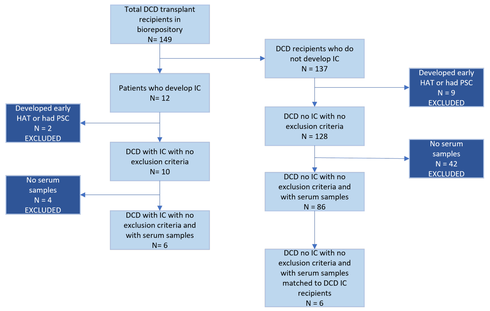
RESEARCH QUESTION

What differences can be seen amongst donation after circulatory death (DCD) liver graft recipient whom develop ischemic cholangiopathy compared to DCD recipients who do not develop IC and donation after brain death recipients?

BACKGROUND

The use of donation after circulatory death (DCD) liver grafts has emerged in the effort to address organ shortage through expanding criteria for donor selection. However, DCD liver transplantation has been associated with increased morbidity and graft loss vs. donation after brain death (DBD) liver grafts. Ischemic cholangiopathy (IC) is recognized as a major post-transplant complication that can occur following DCD liver transplantation, leading to graft dysfunction, potential graft loss, and in some cases, re-transplantation. Multiple mechanisms may contribute to cholangiocyte injury during DCD transplant, including ischemia and bile salt toxicity.

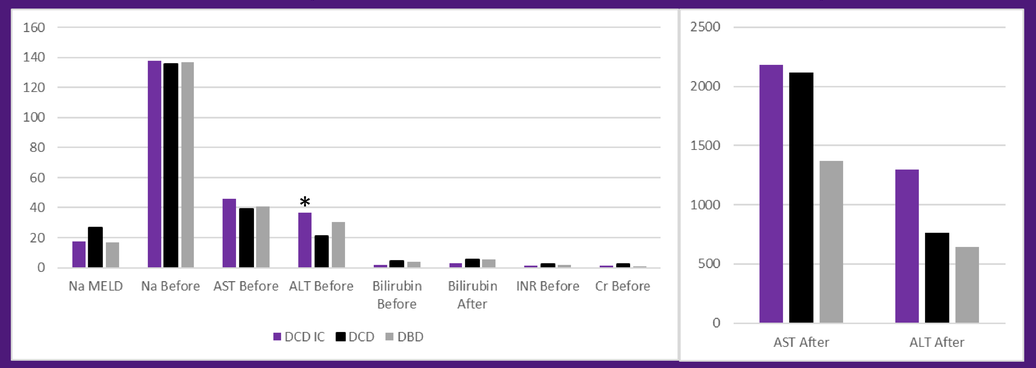
METHODS



Our study investigated current literature surrounding the development and prevention of IC. Additionally, DCD with IC cohort was developed from the liver transplant recipient database. Lastly, a cohort of whether a change in RNA expression, including selective expression of circulating messenger RNAs (mRNA), associated with control of inflammatory markers and bile salt composition was evaluated between DCD recipients who develop IC compared with DCD and DBD recipients who did not develop IC.

ALT levels prior to liver transplant are significantly increased in DCD liver recipients who develop Ischemic Cholangiopathy compared to DCD liver recipients who do not develop IC

Laboratory Values Before and After Liver Transplant



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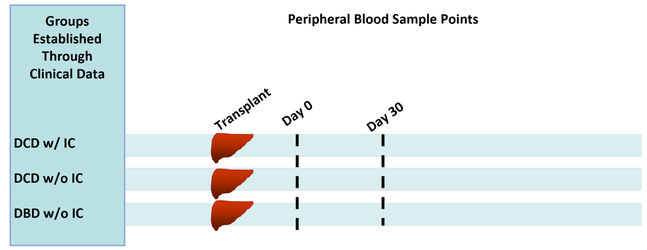
RESULTS

We first performed a literature review on the current knowledge surrounding the proposed mechanisms of cholangiocyte injury associated with IC and the clinical management of IC. We evaluated clinical data from our cohorts and found significant changes in creatinine and ALT levels prior to transplant ($p<0.05$). Next, we evaluated miRNA from blood samples of recipients at specific time points before and after transplantation within a cohort of DCD recipients with established IC.

FUTURE DIRECTIONS

Blood samples were undergoing evaluation by the time of this writing and will be evaluated in future studies.

Future clinical studies could include further investigation into these common laboratory results to investigate if there is a repeatable correlation between ALT, alkaline phosphatase, and bilirubin in the development of IC. Further investigation could also include evaluation of inflammatory markers including WBC, CRP, or procalcitonin if taken to further investigate an increased inflammatory state within DCD recipients who develop IC compared to DCD without IC.



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