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Is Kidney Donor Profile Index (KDPI) Valid for Hepatitis C Aviremic Kidneys?

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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The Kidney Donor Risk Index (KDRI) and Kidney Donor Profile Index (KDPI) assist clinicians with the selection of deceased donor kidneys. This scoring system is based on 10 donor factors including Hepatitis C virus (HCV) status from serological or NAT testing. The donor HCV status (i.e., having either a positive hepatitis C antibody (Ab) or nucleic acid testing (NAT) result) increases the hazard ratio for graft failure by 1.27 and the KDPI by approximately 20%. Whether this increase in KDPI is a true reflection of graft quality for HCV seropositive but not viremic donors is unknown. Further investigations are needed to maximize the use of these organs.

MeSH Keywords: **Hepatitis C Antibodies • Tissue and Organ Procurement • Tissue Donors**

Abbreviations: **Ab** – hepatitis C antibody; **DAA** – direct acting antiviral; **HCV** – hepatitis C virus; **NAT** – nucleic acid testing; **KDRI** – Kidney Donor Risk Index; **KDPI** – Kidney Donor Profile Index; **DCD** – donation after circulatory death; **OPTN** – Organ Procurement and Transplantation Network

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Recently, the Kidney Donor Risk Index (KDRI) and the Kidney Donor Profile Index (KDPI) were introduced to assist clinicians with the selection of deceased donor kidneys. This scoring system is based on 10 donor factors: age, height, weight, race, history of hypertension, history of diabetes, cause of death, serum creatinine, hepatitis C virus (HCV) status from serological (serum antibody (Ab) testing) or nucleic acid testing (NAT), and donation after circulatory death (DCD) status. It provides a more granular assessment of donor quality than the Standard Criteria Donor versus the Extended Criteria Donor dichotomy. The kidneys with the longest expected graft function, with KDPI of 20% and less, are allocated to the recipients who are expected to have the longest survival and thus derive the most benefit [1,2].

One of the factors found to have a negative impact on graft survival by Rao et al. was HCV status of the donor [2]. HCV positive kidneys and HCV infection have been shown to be associated with hepatic complications including cirrhosis and extrahepatic complications including glomerulonephritis. Abbott et al. demonstrated that kidneys from HCV positive donors were independently associated with increased risk of mortality (HR 2.12) in both HCV positive and HCV negative recipients. The increased risk of mortality was a result of infection post kidney transplantation [3]. A key limitation was that this and other studies did not differentiate whether the HCV serology positive donors were also viremic (nucleic acid testing (NAT) positive). Also, these studies were performed in the era of interferon treatment of HCV prior to the introduction of highly effective direct-acting antiviral therapy.

On August 10, 2015, the Organ Procurement and Transplantation Network (OPTN) mandated all organ procurement organizations perform and report HCV NAT results on all deceased and living donors [4]. Donors can become aviremic (NAT negative) either through spontaneous clearance of HCV infection or through treatment. The risk of transmission of HCV infection through kidney transplantation from HCV Ab positive, NAT negative donors is anticipated to be extremely low.

As it stands currently, the donor HCV status (i.e., having either a positive Ab or NAT) increases the hazard ratio for graft failure by 1.27 and the KDPI by approximately 20%. In comparison, history of hypertension, history of diabetes, and DCD carry hazard ratios of 1.13, 1.14, and 1.14, respectively [2]. Whether this increase in KDPI is a true reflection of graft quality and the calculated relative risk of graft failure for HCV seropositive but not viremic donors is unknown.

Now that the granular data on donor testing is available there is an opportunity to further investigate the outcomes of the kidneys from HCV seropositive but non-viremic donors and to maximize the use of these organs.

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