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## **Impact of nonspecific allograft biopsy findings in symptomatic kidney transplant recipients**

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**Objectives:** An indication biopsy is indicated to diagnose the cause of allograft dysfunction. In indication biopsies, subclinical and borderline allograft findings may be fewer than in protocol biopsies. Nevertheless, we occasionally encounter ambiguous biopsy results in symptomatic kidney transplant recipients in practice. The allograft survival outcome in symptomatic recipients with nonspecific allograft biopsy findings remains unclear. The purpose of this study was to analyze the impact of nonspecific indication biopsy findings in symptomatic kidney transplant recipients.

**Methods:** We retrospectively collected records from 773 kidney transplant recipients between January 2008 and October 2021. The characteristics of transplant recipients with nonspecific allograft findings in the first indication biopsy were analyzed. Nonspecific allograft biopsy findings were defined as other biopsy findings excluding ABMR, TCMR, borderline rejection, CNI toxicity, infection, glomerulonephritis, and diabetic nephropathy. The graft outcome was compared between recipients who had never had an indication biopsy and those who had a first indication biopsy with nonspecific findings.

**Results:** Recipients with nonspecific allograft biopsy findings ( $n = 81$ ) and those with no indication biopsy findings ( $n = 510$ ) were studied (Figure A). The causes of the indication biopsy were increased creatinine levels (48.2%), proteinuria (11%), both (18%), or unknown (14%). Following the first indication biopsy, 33.7% and 10.8% of them had second and third allograft biopsies, respectively. Around 30% of recipients with nonspecific indication biopsy findings also had nonspecific findings in the following biopsy. The graft survival in recipients with nonspecific indication biopsy findings was comparable to that in recipients who did not require the indication biopsy before matching (Log Rank  $P=0.931$ ) and after propensity score matching (Log Rank  $P=0.914$ ) (Figure B).

**Conclusions:** Even in symptomatic kidney transplant recipients, nonspecific allograft biopsy findings might not be a poor prognostic factor for allograft survival compared to recipients who did not require the indication biopsy.

Kaplan-Meier graft survival analysis