
BACKGROUND: As patients with chronic kidney disease become older, there is greater need to identify who will most benefit from kidney transplantation. Analytic morphomics has emerged as an objective risk assessment tool distinct from chronologic age. We hypothesize that morphometric age is a significant predictor of survival following transplantation.

METHODS: A retrospective cohort of 158 kidney transplant patients from 2005 to 2014 with 1-year preoperative imaging was identified. Based on a control population comprising of trauma patients and kidney donors, morphometric age was calculated using the validated characteristics of psoas area, psoas density, and abdominal aortic calcification. The primary outcome was post-transplant survival.

RESULTS: Cox regression showed morphometric age was a significant predictor of survival (hazard ratio, 1.06 per morphometric year [95% confidence interval, 1.03-1.08]; P < .001). Chronological age was not significant (hazard ratio, 1.03 per year [0.98-1.07]; P = .22). Among the chronologically oldest patients, those with younger morphometric age had greater survival rates compared to those with older morphometric age.

CONCLUSIONS: Morphometric age predicts survival following kidney transplantation. Particularly for older patients, it offers improved risk stratification compared to chronologic age. Morphomics may improve the transplant selection process and provide a greater assessment of prospective survival benefits.