
BACKGROUND: Better risk assessment tools are needed to predict post-transplantation diabetes mellitus (PTDM). Using analytic morphomic measurements from computed tomography (CT) scans, we aimed to identify specific measures of body composition associated with PTDM.

METHODS: We retrospectively reviewed 99 non-diabetic kidney transplant recipients who received pre-transplant CT scans at a single institution between 1/2005 and 5/2014. Analytic morphomic techniques were used to measure abdominal adiposity, abdominal size, and psoas muscle area and density, standardized by gender. We measured the associations of these morphomic factors with PTDM.

RESULTS: One-year incidence of PTDM was 18%. The morphomic factors significantly associated with PTDM included visceral fat area (OR=1.84 per standard deviation increase, P=.020), body depth (OR=1.79, P=.035), and total body area (OR=1.67, P=.049). Clinical factors significantly associated with PTDM included African American race (OR=3.01, P=.044), hypertension (OR=2.97, P=.041), and dialysis vintage (OR=1.24 per year on dialysis, P=.048). Body mass index was not associated with PTDM (OR=1.05, P=.188). On multivariate modeling, visceral fat area was an independent predictor of PTDM (OR=1.91, P=.035).

CONCLUSIONS: Analytic morphomics can identify pre-transplant measurements of body composition that are predictive of PTDM in kidney transplant recipients. Pre-transplant imaging contains a wealth of underutilized data that may inform PTDM prevention strategies.