The value of Pharmacogenomics for White and Indigenous Americans after Kidney Transplant

Alexandra Brady¹, Adrijana Kekic², Katie Kunze², Elisabeth Lim², Mira Keddis²
¹University of South Carolina School of Medicine Greenville
²Mayo Clinic

Introduction: Kidney transplant recipients (KTR) have a significant medication burden with risk for drug-drug and gene-drug interactions. The objective of this study is to define the value of pharmacogenomics (PGx) testing comparing a cohort of White versus Indigenous American (IA) KTR.

Methods: A prospective cohort study of 26 IA and 50 White KTR patients with OneOme22 PGx gene panel.

Results: Mean age 53 (SD14.5 years), 50% female, 75% required dialysis prior to transplant. Mean number of medications at the time of the OneOme test was 13 (SD4.6), 54% were on beta blockers, 31% on antidepressants, 17% on anticoagulation, 50% on pain medications and 25% on statin therapy. Significant differences in CYP2C19 and CYP2D6 were noted between IA and White patients (p<0.05). IA patients had more low or intermediate activity of VKORC (vs normal) compared to White (p=0.018) and more normal activity (vs reduced) of CYP4F2 compared to Whites (p=0.005), both are critical for warfarin drug dosing and efficacy. More IA patients had increased metabolism of NUDT15 (2% vs 8%) and TMPT phenotypes compared to Whites (27% vs 14%) which has significant dosing implications for Azathioprine. SLC6A4 phenotype, significant for antidepressant metabolism, was reduced in 39% of IA patients compared to 20% of whites suggesting delayed or lack of response to therapy (p=0.07). 12% of Whites had increased F2 phenotype associated with increased risk of thrombosis. 34% of patients had recommended change in medication and 19% had drug-gene interactions identified based on current medication.

Conclusions: KTR have a high rate of identified drug-gene interactions and over a third of patients would benefit from modification in medication based on PGx results.