**Comparisons of predictive capabilities of triglyceride glucose index, triglyceride glucose-body mass index and METS-IR for predicting unfavorable renal outcomes in patients with type 2 diabetes**

**Background & Aim**

Insulin resistance has been previously suggested to be associated with kidney outcomes in type 2 diabetes. The current study aimed to evaluate and compare the predictive capabilities of novel insulin resistance biomarkers triglyceride glucose (TyG) index, TyG-body mass index (TyG-BMI) and metabolic score for insulin resistance (METS-IR) for predicting unfavorable renal outcomes in patients with type 2 diabetes.

**Methods**

This single-center retrospective study included 297 patients with type 2 diabetes with available data on kidney function, TyG, TyG-BMI and METS-IR during March 2019 and July 2021. The primary endpoint of unfavorable renal outcomes included estimated glomerular filtration rate decline > 30%, dialysis, or kidney transplantation. Cox proportional hazard ratio models were applied to explore the predictive abilities of insulin resistance biomarkers. Time-dependent receiver-operating characteristic (ROC) curves were generated to compare the predictive capabilities of TyG, TyG-BMI and METS-IR.

**Results**

Patient’s mean age was 67 years, with a male prevalence of 60.27%. During a median follow-up time of 33 (interquartile range 24-42) months, a total of 97 (32.66%) reached the primary endpoint. Multivariable-adjusted Cox proportional hazard regression analysis indicated that TyG-BMI (HR=2.42, 95%CI 1.99-2.87) and METS-IR (HR=1.87, 95%CI 1.42-2.13) were independent risk factors for unfavorable renal outcomes. Time-dependent ROC curves indicated that the area under the curve were significantly higher by TyG-BMI than TyG (0.76 v 0.69, P=0.009; 0.79 vs 0.71, P<0.001) or METS-IR (0.76 vs 0.72, P=0.02; 0.79 vs 0.73, P=0.008) at 1 year and 3 year.

**Discussion/Conclusion**

This study suggested that TyG-BMI outperformed TyG and METS-IR in predicting unfavorable renal outcomes in patients with type 2 diabetes.