The 4-Variable Kidney Failure Risk Equation for Prediction of Allograft Loss in Transplant Recipients: A Single-Centre Study

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Introduction
The 4-variable KFRE is a validated, simple tool to predict end-stage kidney disease (ESKD). However, data on its performance among kidney transplant recipients is lacking.

Objective
We aimed to assess the 4-variable KFRE for prediction of the 5-year death-censored allograft failure in University Malaya Medical Centre.

Methods
We included kidney transplant recipients between 2006 and 2016. The primary outcome was death-censored allograft failure, defined as starting dialysis or undergoing retransplantation. The 5-year risk of graft failure was predicted using the 4-variable KFRE closest to 1-year posttransplant. The performance of KFRE for graft failure prediction was analysed using discrimination and calibration statistics.

Results
A total of 52 patients were involved in the analysis and 49 (94.2%) were living-related kidney transplant recipients. The mean eGFR was 68.7 (± 16.6) ml/min/1.73m2 with the median UACR of 8.8 mg/mmol (IQR:1.5 to 20.3) at 1-year post transplant. 30.8% had eGFR of less than 60 ml/min/1.73m2. There was a total of 8 (15.4%) graft failures after 5 years of which 2 had calculated KFRE risk of >15% and the others were of low risk (<5%). The 4-variable KFRE showed good discrimination with area under the receiver operating characteristic curves (AUC) of 0.723 (95% confidence interval [CI] 0.494–0.952). Excellent discrimination was observed in patients with eGFR < 60 ml/min/1.73m2 with the AUC of 0.875 (95% confidence interval [CI] 0.643-1.000). However, the calibration plot showed poor calibration with a tendency to overestimation in the lower risk patients.

Conclusions
The 4-variable KFRE prediction tool at 1 year post transplant demonstrated good discrimination for predicting 5-year risk of graft failure among recipients especially at eGFR of <60 ml/min/1.73m2. However, its predictive performance is limited due to inadequate calibration and further validation in larger cohorts is beneficial to strengthen its potential role in the clinical implementation.

Keywords: Kidney Failure Risk Equation, Kidney transplant, Allograft failure