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P198 -Pre-transplant risk stratification for development of New Onset Diabetes After Transplantation (NODAT) in renal transplant recipients

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Introduction:
New Onset Diabetes After Transplantation (NODAT) has a significant morbidity and mortality rate yet it occurs in 15-20% of renal transplant recipients and its frequency is increasing (1,2). Complications include increased microvascular and macrovascular disease, increased graft loss, reduced graft survival, reduced quality of life and an 87% increased risk of death in renal registry report analyses (1). All of the above, amongst others, also pose a significant cost to our health service (2,3). A number of modifiable risk factors for NODAT have been identified, however there is currently no risk stratification scoring system in existence in the UK for our transplant recipient demographic. This study aims to develop a reliable risk stratification scoring system to identify areas for further research, enable targeted NODAT prevention and management programs and guide appropriate enrolment in prevention trials.

Methods:
We conducted a retrospective cohort study of 137 renal transplant recipients under our care who received a renal transplant locally between January 2015 and December 2017. Development of NODAT was required to be between post-transplant day 45 and 365. NODAT diagnostic criteria were any two of: 1) A random glucose ≥ 11.1 mmol/L taken on two or more occasions, 2) A fasting glucose ≥ 7.9 mmol/L on two or more occasions 3) A HbA1C of ≥48 mmol/L. Known risk factors for developing NODAT were identified. Univariative analysis of risk factors were done where appropriate using unpaired T- tests with a confidence interval of 5% ($P < 0.05$). A scoring system was developed using grid analysis. Predictive power was tested by determining the Area Under Curve (AUC) for the Receiver Operating Curves (ROC) of each predictive model.

Results:
16% of patients developed NODAT between 45 to 365 days post-transplant. Risk factors for NODAT we identified included age ≥ 50, BMI ≥30kg/m^2, random glucose ≥7.9mmol/L, use of maintenance steroids, triglycerides ≥2.24mmol/L, CMV and HLA-mismatch status, cadaveric donor and use of gout medication pre-transplant. Our initial risk stratification model demonstrated an AUC of 0.78.

Discussion:
Renal transplantation is the best option for patients with end stage renal failure and is patients' treatment of choice due to the benefits on morbidity, mortality and quality of life. However, with up to a fifth of transplant recipients developing NODAT, these benefits can be severely threatened. An AUC of 0.78 demonstrates good predictive power for our proposed model. The risk prediction model we have developed caters for a UK-specific population demographic and more highly discriminated those at risk of NODAT in comparison to existing prediction models internationally. Our model will be able to facilitate future clinical intervention studies aiming to decrease risk of NODAT in transplant recipients.