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HLA antibody and Tacrolimus variability in transplant recipients during transition from paediatrics to regional adult units.

Dr Shilpa Kaki[1], Dr Abu Bakar Karmila[2], Dr John Goodwin[3], Dr Osasuyi Iyasere[4], Dr Ian Stott[6], Dr Catherine Byrne[5], Dr Janson Leung[7], Dr Matt Williams[8], Sr Gill Mathews[9], Dr Sarah Jenkins[1], Dr Andrew Lunn[2], Dr William McKane[1]

[1]Sheffield Kidney Institute, Sheffield, United Kingdom, [2]The Queen's Medical centre, Nottingham, United Kingdom, [3]H&I Laboratory, Sheffield, United Kingdom, [4]University Hospital of Leicester, Leicester, United Kingdom, [5]Nottingham University Hospitals NHS Trust - City Hospital, Nottingham, United Kingdom, [6]Doncaster Royal Infirmary, Doncaster, United Kingdom, [7]Royal Derby Hospital, Derby, United Kingdom, [8]United Lincolnshire Hospitals NHS Trust, , United Kingdom, [9]Addenbrooke's Hospital, Cambridge, United Kingdom

Background:
Adolescent transplant recipients in transition from paediatrics to adult units are known to be at high risk of graft failure. We previously showed high prevalence of allosensitisation and poor graft outcomes in transplant recipients transitioned to single adult unit. We now extend the evaluation to include all the patients transitioned from single paediatric centre to regional adult units.
Method:
Retrospective review of first transplant recipients in transition from single paediatric centre to regional adult units with a working graft 2004 - 2017. Human Leukocyte Antigen (HLA) antibody (Ab) testing method was consistent throughout the study period with Luminex Single Antigen Beads. Tacrolimus variability was calculated 12 months prior to transition. Only patients who are on tacrolimus with minimum of 3 levels were included in the analysis.
Results:
There were 99 patients at a median age of 19, with a median eGFR of 68 ml/min, transitioned to three large adult renal/transplant centres and the rest to 11 other Adult units. 8 patients were lost to follow up and are not included in the analysis. Median follow up was 4yrs (Range 1 to 13).
37% patients transitioned with eGFR <60 ml/min. We noticed 41% acute rejection rate prior to transfer which was associated with graft failure after transition (45.9% vs 24% p=0.026). HLA Ab prevalence prior to transfer was 30.8% which increased to 60.4% after transfer. 18.7% had Donor Specific Antibody (DSA) prior to transfer which increased to 39.6% after transfer. 10 patients who had no antibodies and 2 patients who had Non donor specific antibodies (NDSA) prior to transfer developed DSA after transfer to Adult units. The frequency of HLA antibody monitoring was variable in adult units with some patients having no antibody check at and/or after transition.
Patients with HLA Ab prior to transition had higher Acute rejection (18.5% vs 10.2% p=0.016) and graft failure rate (46.4% vs 16% p=0.000) after transfer. 33% of grafts failed after transition of which 76% failed due to immunological cause.15% of Patients had urinary tract infection (UTI) needing hospital admission prior to transfer but this did not predict allosensitization or graft failure after transition.
High intrapatient tacrolimus variability (cut off coefficient of variation>30%) before transition was associated with low mean eGFR at transition (58.7 ml/min vs 70.6 ml/min p=0.025) and high graft failure rate (41% vs 20% p=0.029). Clinic DNA episodes after transition as a surrogate marker of non-concordance (71.7% vs 50% p=0.028) were worse in patients with high intrapatient tacrolimus variability.
Clinic DNA episodes were common after transition with 64% patients having ≥2 clinic DNA episodes but this did not predict graft failure.
Conclusion:
When transition patients enter adult service they already have high prevalence of allosensitisation that continues to rise. This is likely to be a factor in the subsequent high graft failure rate across various adult

units. High intrapatient tacrolimus variability prior to transition predicts poor concordance and worse graft outcomes after transition.