Importance of changes to treatment plans based on pediatric renal transplant biopsy findings in Ireland: a 10-year review

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Introduction

- The therapeutic value of protocol biopsies in pediatric renal transplantation remains unclear worldwide
- The use of biopsies post-transplant has shown to lead to better graft function 3.5 years after transplantation[1]
- The purpose of this multi-site study is to describe the impact of targeted biopsies on altering pharmacological management in this pediatric patient group

Study Aims

- Identify demographics of pediatric renal transplant patients across Ireland from 2007-2017
- Identify treatment changes in post-transplant renal biopsy patients

Methods

- IRB approval was sought by Temple Street Children's University Hospital
- A retrospective review of 103 patients who received a renal transplant from 2007-2017 was analyzed
- Patients who underwent at least one renal biopsy at Temple Street Children's University Hospital and Our Lady Children's Hospital, Crumlin, were included
- Data collected: demographic data, clinical indications, biopsy and histological findings
- Data analyzed via Microsoft Excel 2016

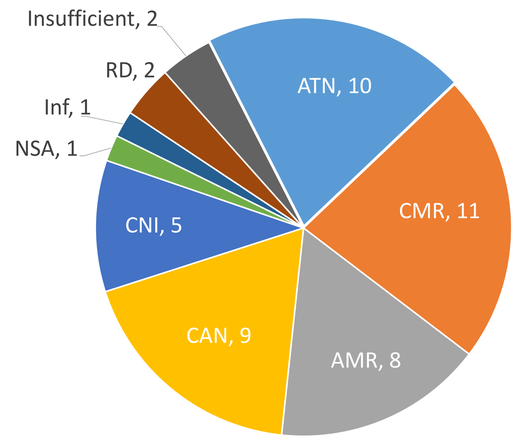
Results

- 26 of 103 patients (24%) who received a renal transplant had one or more biopsies (49 total)
- Mean age is 9.64 years ± 4.26 years
  - No difference in age distribution of those biopsied and not biopsied (p = 0.2874 T test)
- Time between transplant and biopsy:
  - ≤ 1 year = 21/49 • 2-5 years = 17/49 • > 5 years = 11/49
- Changes in treatment after biopsy due to:

Acute Rejection	n = 20
Tacrolimus toxicity	n = 5
Donor-specific antibodies	n = 5

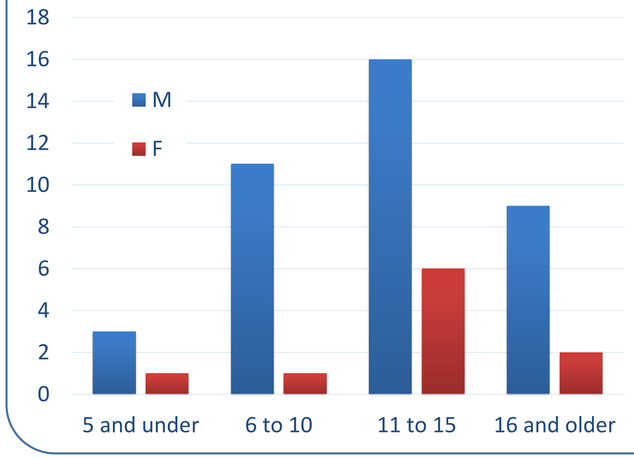
- Two patients had changes in their antibiotics and there was no change in remaining patients (n=17)
- No major complications were seen during biopsy
- The following figures are representative of all 49 biopsies

Predominant Diagnoses from Biopsy Findings

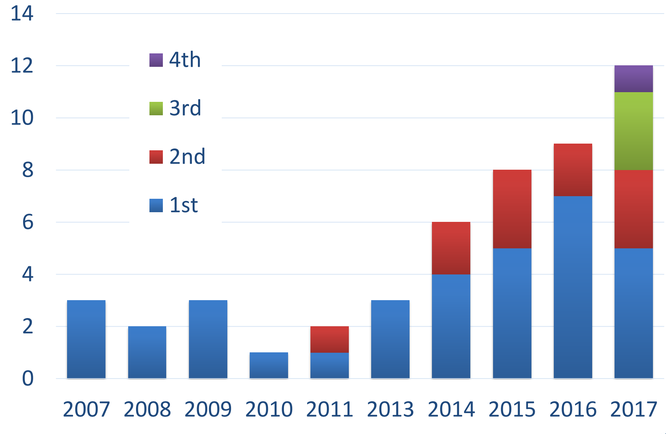


Cell mediated rejection (**CMR**), Antibody mediated rejection (**AMR**), Drug nephrotoxicity (**CNI**), Chronic allograft nephropathy (**CAN**), Acute tubular necrosis (**ATN**), Other infection (**Inf**), Recurrent disease (**RD**), Non-specific nephropathy (**NSA**).

Transplant Patients by Age at Biopsy



Biopsy Number from 34 patients 2007-2017



Conclusions

- Blind treatment without a biopsy can be potentially harmful
- With the single clinical marker of a raised creatinine, 41% of biopsied patients required increased immunosuppression
- The evidence does not suggest protocol biopsies would be advantageous - particularly as complications may occur
- Judicious use of biopsies in the 24% of transplant patients with indications led to targeted treatment with few risks of over immunosuppression and complications

Next Steps

A long-term follow up study of outcomes comparing centers that use targeted versus protocol biopsies is recommended.

Citation

1. Kanzelmeyer NK, Ahlenstiel T, Drube J, et al. Protocol biopsy-driven interventions after pediatric renal transplantation. Pediatric Transplantation 2010: 14: 1012–1018.

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