P0089 Virtual crossmatching reduces the Cold Ischaemic Time for local, but not imported, kidneys.

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The benefit of the virtual crossmatch was assessed in our centre over a four year period. The incidence of delayed graft function and patient survival at twelve months were not statistically different. Mean serum creatinine at twelve months was lower in the VxM group (p<0.05). Virtual crossmatching reduces the mean cold ischaemic time by almost 4 hours, but this benefit was only significant when kidneys were sourced from local donors.

Introduction

Audit has shown that reducing cold ischaemic times (CIT) for kidney transplantation can benefit graft outcome and even patient survival [1]. The virtual crossmatch (VxM) is now widely used to reduce CIT but does carry a small risk due to potentially unknown sensitising events.

To assess the benefit of the VxM in our centre we analysed the CIT and outcome data for patients transplanted with a deceased donor kidney between November 2009 and March 2015. Patients were defined as VxM negative if they were previously untransplanted and consistently negative (for at least one year) when screened using luminex single antigen beads (One Lambda, Canoga Park, CA).

We were interested in the cause of any delay in the transplant process and therefore recorded whether the kidney came from a donor local to the transplant centre or externally via the national sharing scheme.

Methods

Data analysed included overall CIT, donor origin (national or local), delayed graft function, creatinine at six and twelve months, and patient survival at one year. If two kidneys were offered at the same time the order of transplant was also noted and data from the second kidney excluded from this analysis. This was to avoid theatre and surgeon availability confounding other aspects of the analysis.

Results

Two hundred and two transplants were performed during the study period, of which 51 were VxM negative (44 first or only kidney and 7 second kidney in succession). Results presented are for the first or only kidney if two were offered together.

Kidney function

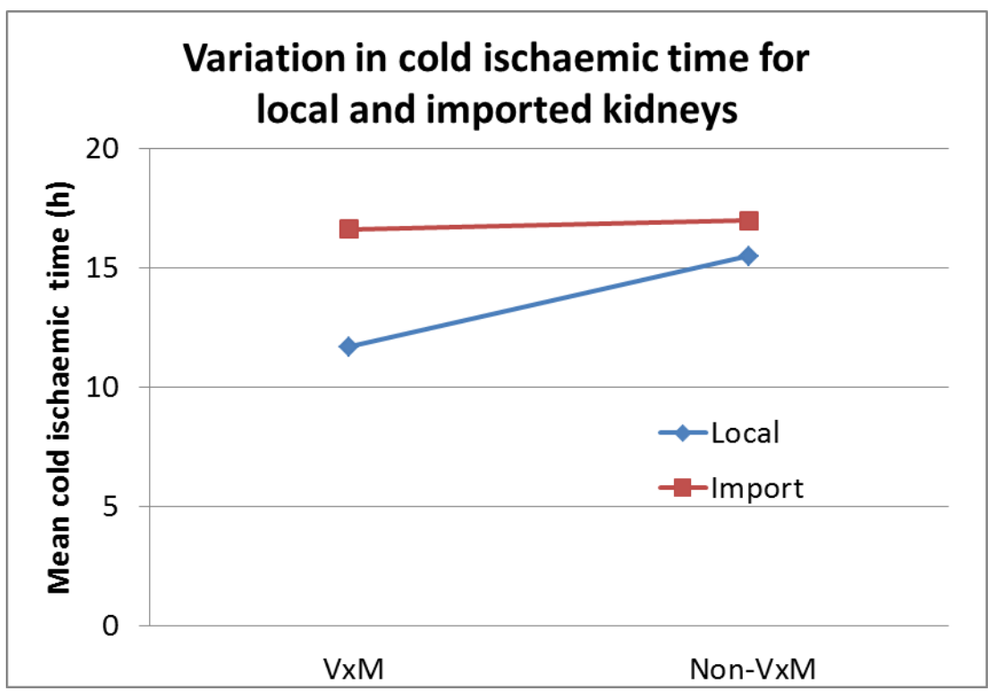
25% of patients transplanted following VxM experienced delayed graft function compared with 31.3% of patients transplanted following standard crossmatch (p=0.47, not significant). In addition there was no difference in patient survival at twelve months.

Mean serum creatinine at twelve months was significantly lower in the VxM group (138 vs 196 umol/l, p=0.044), but this may reflect a less complicated cohort in the VxM group (HLA unsensitised and first transplants). Indeed overall CIT for the whole study group was not correlated with serum creatinine at one year (p=0.35, not significant.)

Cold Ischaemic Times

The median CIT for patients transplanted following a negative VxM was 12.8hr compared to 15.3hr (p<0.01). When the kidney origin was analysed (ie offered locally or via the national kidney matching scheme) then the benefit of the VxM was lost for kidneys imported into the region.

For local kidneys the CIT was 11.7hr for VxM transplants compared to 15.5hr for non-VxM (P=0.004), whereas for imported kidneys the CIT was 16.6hr following VxM compared to 17hr following standard crossmatch (p=0.7, not significant, see graph)



Discussion

Whilst there was a tendency for VxM negative patients to experience less delayed graft function and have a lower serum creatinine at one year, this only reached significance for serum creatinine and may reflect a less complicated cohort in the VxM group.

As all kidneys are treated the same way on arrival at theatres we expected the benefit to VxM negative patients to be as great for imported as for local kidneys, but this is not the case.

We have been unable to satisfactorily explain this phenomenon, but suggest it could be due to surgeons allowing a greater margin of error for the arrival of imported kidneys compared to those travelling from 'local' donor hospitals, and booking theatre time accordingly. The ability to access theatres at short notice could therefore enable national kidneys to benefit from significantly shorter CIT as local kidneys currently do.

References

1. Debout A, Foucher Y, Trébern-Launay K et al. Each additional hour of cold ischemia time significantly increases the risk of graft failure and mortality following renal transplantation. *Kidney International* 2014; 87: 343

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