Paediatric renal transplantation: moving forward in the field

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Editorial commentary for "Topical Collection"

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The field of renal transplantation is becoming more complicated with both clinicians and academics needing to know the latest advances. Although we learn from adult practice, children are not small adults and there are inherent differences in anatomy, physiology, pathophysiology and immunology from infants to children to adolescents with their developing immune system. This makes the management of patients more complex for both physicians and surgeons. Children may be the recipients of multiple renal transplants, so subsequent sensitisation is a key issue. We aim for close HLA matching, but there is uncertainty about when poorer matching is outweighed by the detrimental effects of longer waiting on the deceased donor list. Should we enter antibody incompatible donor-recipient pairs into National Kidney Sharing Schemes, and should we include compatible pairs in order to achieve better matching ? Some children will be lucky enough to receive an altruistic living donor but many children will remain on the deceased donor renal transplant waiting list. Should we consider donation after cardiac death (DCD; non-heart beating) donors and marginal donors for some prospective paediatric renal transplant recipients (pRTR) ? What is the role of ex-vivo normothermic perfusion for such cases ? Should we accept neonatal and infant en bloc donors for prospective pRTR, with the increased thrombotic risk which that may entail ? Which children should receive induction agents for their first renal transplant when they may receive multiple renal transplants during their childhood? Should we use monoclonal and polyclonal antibodies more readily in adolescents who are at risk of losing their renal allografts due to non-adherence ? Would belatacept, given by monthly infusion, help with adherence to conventional immunosuppression for these patients ?

Historically, we take the evidence from our adult renal transplant colleagues but we are now performing more studies and clinical trials, including multi-centre randomised controlled studies in pRTR. This is increasing our knowledge but also the armamentarium of available

immunosuppressive agents, in a group of patients who are at increased risk of infectious complications. There is increased Epstein-Barr virus naivety resulting in increased rates of post-transplant lymphoproliferative disorder in our paediatric population. However, some children require increased immunosuppression, such as those undergoing blood group ABO incompatible and/or HLA incompatible renal transplants as well as those patients developing antibody-mediated rejection. Is there a role for mTOR inhibitors to promote long term graft survival, and can newer depleting agents such as bortezomib be used?

This *Topical Collection* in *Pediatric Nephrology* aims to make it easier for the multi-disciplinary team to get answers to these questions by drawing together the latest up-to-date basic science and research papers as well as clinically relevant reviews on paediatric renal transplantation into one place.

For example we have upcoming invited reviews on the new generation of ABO antibody diagnostics, on tissue damage processes and mitochondrial mechanisms in ischemia reperfusion injury, as well as how proteomics could give insight into tissue damage and repair processes. We will feature reviews on preventing delayed graft function, managing failing allografts and transitioning of adolescent renal transplant recipients. We will also focus on the future of transplantation, looking at state of the art immunosuppression protocols, developments in regulatory cell and stem cell therapies and cutting-edge research in growing organs for transplantation.

We bring this exciting venture to you with the thoughts of improving the outcomes of our patients and their dedicated families who tirelessly support them.

Conflicts of interest

The authors have no conflicts of interest.

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