Editorial

Organ and Tissue Transplantation

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There could not have been a more appropriate time as now for a special issue of the Annals dedicated to transplantation. The topic is in the lay press everyday for both the right and the wrong reasons. This special issue covers not only the science and art of transplantation but also many of the ethical and social issues that are inherent in this field of medicine. The issue provides an overview of the Singapore experience in transplantation of various organs and tissues and has also been enriched by the contributions from world leaders in the field.

One common theme in this issue of the Annals is the success of the various solid organ transplant programmes in Singapore. Indeed, the results of renal (both adult and paediatric) and heart transplants in Singapore, as reported by Vathsala and Chow;[1] Ng and colleagues;[2] and Sivathasan,[3] are comparable to if not better, than those reported from North American or International Registries. The review of liver transplantation in Asia by Ng and Lo[4] further highlights the innovative techniques that have evolved specifically to address the problem of organ shortage and the high prevalence of hepatocellular carcinoma in Asia. Indeed, Asia is considered the world leader in liver transplantation with many centres in the Far East having pioneered these techniques. The reviews by Hwang and Ong[5] and Tan et al[6] on advances in haematopoietic stem cell and cornea transplantation respectively, further attest to the advancing field of tissue transplantation. In total, transplantation has come of age in Singapore, is no more an experimental form of therapy but is instead the standard of care for many life-threatening conditions.

A second fact highlighted in this issue are the similarities in complications of transplantation across all solid organs. Infectious complications were the leading cause of death among both adult and paediatric renal transplants as well as heart transplant recipients.[1,2] On the contrary, chronic rejection and chronic allograft vasculopathy were the leading causes of graft failure for renal and heart transplants respectively. As suggested by Sir Roy Calne[7] in this issue, continued research in strategies to ameliorate chronic graft rejection and antibody mediated rejection, to mitigate the non-immunosuppressive toxicities of immunosuppressive drugs and to promote tolerance, is needed to further improve the results of transplantation.

While the surgical and technical problems of transplantation may have been largely resolved and basic and translational research may address the complications in the future, the success has resulted in a worldwide shortage of organs for transplantation. This theme of imbalance between supply and demand for organs echoes through many of the publications in this special issue of the Annals. Vathsala and Chow[1] draw attention to the significant proportion of local patients receiving overseas kidney transplantation and suggest that more needs to be done to increase local transplantation rates. Ng and colleagues[2] report worse outcomes for paediatric renal recipients receiving deceased donor renal transplants in Singapore, in comparison to their North American counterparts, likely due to the shortage of deceased donor kidney transplants in Singapore with consequent increased waiting times for this cohort.

As if in response to this dilemma, various perspectives on ethical, cultural, legislative and practical aspects of transplantation are addressed in several publications in this issue of the Annals. In a thought provoking article, Voo et al[8] examine the ethical conflicts and responsibilities to the sick and dying and its limits, the concepts of autonomy, informed consent, end-of-life decisions and social equity and their potential impact on transplantation practice and policy. By exploring differences in perceptions of organ donation and transplantation in multi-cultural and multi-ethnic societies, Oniscu and Forsythe[9] conclude that transparency, education and communication are key to resolving these differences. Their thoughtful analysis puts the Asian experience in perspective and proves that "one glove fits all" is not a solution to organ shortage.

On the legislative front, like other European countries, Singapore has since 1987 adopted an "opt-out" system of organ donation. Although other countries are still grappling

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with the complexities of this model, to its credit, Singapore has implemented this bold legislation in a phased approach while taking into account the multi-cultural, multi-religious and multi-ethnic cultural diversities in the country. Although, the implementation of the Human Organ Transplant Act (HOTA) has resulted in an increase in the numbers of transplants, Kwek et al[10] explore in their article whether the full potential of this legislation has been realised. Given the wide variation in donor rates between hospitals in Singapore, they call for more efforts to encourage widespread acceptance of organ donation among the Singaporean public, and adoption of measures to increase referral for organ donation from all intensive care units in the nation. They highlight the ultimate responsibility of the intensive care team to convert an end-of-life situation to one of potential organ donation. On a practical level, Lee et al[11] examine the issue of optimising the use of a scarce and precious resource from a user's point of view. They note that discard of marginal livers may prevent the utilisation of all available deceased donor livers and advocate instead for redefinition of usable and non-usable organs,[12] and the use of organs from these marginal donors and from non-heart beating donors.

While the technical and surgical advances over the last four decades of transplantation in Singapore have contributed to much of the success and progress, much more needs to be done to address the imbalance between supply and demand of organs for transplant. With increasing life expectancy and the ascendency of chronic diseases in our developed nation, the demand for organ transplants is only likely to grow. Efforts to prevent organ failure and thus reduce the need for organ transplantation, such as with preventive and screening strategies will go far in reducing this growing demand. On the supply side, education of the general public, with initiatives aimed at secondary school students, removing the age limit for potential organ donors (as has been legislated in the Singapore Parliament in 2009), acceptance of more marginal donors and facilitating organ donor referral in all intensive care units will also increase the numbers of deceased donor organ transplants. Public educational efforts, together with high medical and ethical standards in screening and caring for live donors and in the practice of transplantation, will also promote a culture of living donation. Research will continue to play an important role in further reducing the complications and improving the success of transplantation. We hope that this issue on transplantation provokes the reader to explore his own role in making transplantation a success in Singapore.

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