Improving outcomes for people with heart and kidney transplants

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The major limitation to the long-term survival of people with heart and kidney transplants is AV – allograft vasculopathy, also called allograft arteriosclerosis. AV refers to grafts between two or more individuals, as in transplantation, which result in diseased blood vessels. AV leads to chronic rejection and is resistant to current immunosuppressive treatments. The development of new treatment strategies requires a more complete knowledge of the mechanisms causing AV.

Investigations by two Dalhousie University researchers – Gregory Hirsch and Tim Lee – provide key insights into why AV and chronic rejection of heart and kidney transplants occurs. Their basic science research has identified flaws in the currently held theory of the development of AV. Because of recent data from their lab and others, it has become clear that the accepted theory for the development of AV is incorrect. Dr. Hirsch and Dr. Lee have determined several key facts that will help identify mechanisms of AV and eventually allow the prevention of this devastating condition.

The researchers showed that CD8+ T cells contribute substantially to late graft rejection, which would explain why AV is resistant to current immunosuppressive treatments. They also showed that a particular lesion characteristic of AV, called the occlusive intimal lesion, does not result from the donor, as was previously thought, but is derived exclusively from the recipient of the transplant. This finding will have a significant impact on the development of drug therapies to treat this disease.

In addition to the research findings, another important benefit of this research has been the training of two new Masters students and one PhD student, thus improving the capacity for cardiovascular research in Nova Scotia.

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Research Results