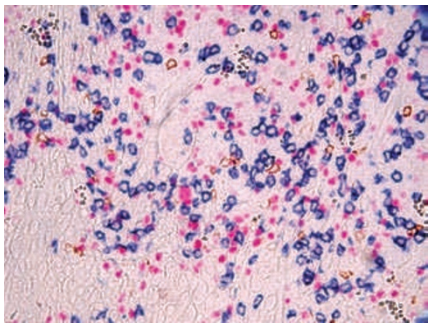
TRANSPLANTATION

T_{REG} cells predict risk of cutaneous squamous cell cancer after transplantation

Recipients of organ transplants have an increased risk of cutaneous squamous cell carcinoma (SCC) compared with that of the general population; however, laboratory tests to predict the development of SCC in transplant recipients are not available. A new report now demonstrates that the characterization of T-regulatory (T_{REG}) cell populations may be useful in predicting risk of SCC after kidney transplantation.



Excised squamous cell carcinoma from a renal transplant recipient, showing FOXP3$^+$ (pink), CD8$^+$ (blue), and CD56$^+$ natural killer (brown) cells. Permission obtained from the Transplantation Research Immunology Group, Nuffield Department of Surgery, John Radcliffe Hospital, Oxford, UK.

High numbers of CD28$^-$CD8$^+$ and CD4$^+$FOXP3$^+$ T_{REG} cells are predictive of poor outcomes in various types of cancer. Robert Carroll and colleagues from Oxford, UK, therefore hypothesized that an increased number of these T_{REG} cells would be associated with the development of SCC in renal transplant recipients.

The researchers phenotyped peripheral blood mononuclear cells from renal transplant recipients with and without SCC by use of flow cytometry. The two groups were matched for age, gender, and duration of immunosuppressive therapy. As Carroll explains, "when compared with levels in patients without SCC, numbers of CD28$^-$CD8$^+$ and CD4$^+$FOXP3$^+$ T_{REG} cells were increased in patients with SCC". Carroll and colleagues also followed the renal transplant recipients for a median of 340 days to identify markers that might be predictive of SCC. "High numbers of FOXP3$^+$ T_{REG} cells and low numbers of natural killer cells predicted which kidney transplant recipients were at high risk of developing new SCC", says Carroll.

The researchers believe that this study is the first to demonstrate a link between T_{REG} cell phenotype and risk of recurrent cancer in transplant recipients. They now hope to determine whether their findings are applicable to patients on different immunosuppressive regimens and to patients who are exposed to high levels of ultraviolet radiation.

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Original article Carroll, R. P. *et al*. Immune phenotype predicts risk for posttransplantation squamous cell carcinoma. *J. Am. Soc. Nephrol*. **21**, 713–722 (2010)