

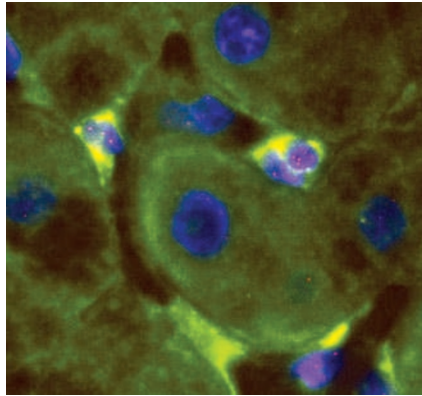
LIVER TRANSPLANTATION

Liver transplantation is associated with accelerated lymphocyte ageing

The findings of a new study suggest that healthy liver transplant recipients age more rapidly than age-matched controls.

Graeme Alexander and colleagues tested the hypothesis that liver transplantation is associated with accelerated ageing, because many liver transplant recipients with established grafts die from infection, cancer and cardiovascular disease rather than graft failure. Immune senescence—immune system ageing—is associated with infection, cancer and cardiovascular disease in nontransplant patients and increases the risk of morbidity and mortality in healthy elderly patients.

Shortened telomere length is a marker of immune senescence, so Alexander *et al.* measured lymphocyte telomere length in 97 healthy patients who had established liver allografts and 41 healthy controls. Lymphocyte membrane markers of senescence or ageing were also measured.



Intrahepatic CD4⁺ T cells identified by bright green cytoplasmic staining. Telomeres are evident as pink spots in blue-stained (DAPI+) nuclei. Courtesy of A. Aravinthan.

Lymphocytes from liver transplant recipients had shorter telomeres and expressed more markers of maturity than those from controls. Age, hepatocellular carcinoma pretransplantation and skin malignancy post-transplantation were

associated independently with shortened telomeres. Age and past cytomegalovirus infection were associated independently with markers of lymphocyte maturity. “Thus,” report the authors, “lymphocytes from liver transplant recipients are older ‘biologically’ than lymphocytes from ... controls.”

A large prospective study with samples collected before and at intervals after transplantation is now underway. “We hope to correlate the complications of liver transplantation with senescence and to determine whether this is related to disease leading to the transplant or to modifiable factors such as immune suppression,” explains Alexander.

Natalie J. Wood

Original article Gelson, W. *et al.* Features of immune senescence in liver transplant recipients with established grafts. *Liver Transpl.* **16**, 577–587 (2010)