Heart & Lung II - Heart

Rejection surveillance after cardia transplantation

Peter MACDONALD

Serial endomyocardial biopsy (EMBx) is still recommended as the most reliable method for detection of acute rejection after heart transplantation, however it is an imperfect ‘gold standard” as evidenced by considerable inter-observer disagreement regarding the histological grading of rejection among cardiac pathologists. Newer methods of processing biopsy samples eg the molecular microscope and in situ immune profiling may improve the interpretation of the biopsy, however the procedure is invasive and carries the risk of serious acute (eg cardiac tamponade) and long-term (eg tricuspid valve damage) complications. There are now a number of promising non-invasive approaches to rejection surveillance which fall into two broad categories – peripheral blood-based biomarkers and cardiac imaging. Peripheral blood based biomarkers include gene expression profiling (as a measure of immune activation) and donor derived cell-free DNA (as a measure of myocardial injury) or the combination of the two. High sensitivity troponin I has also been proposed as a non-invasive blood-based marker of acute rejection. The most promising imaging modality is cardiac magnetic resonance imaging (cMRI) using T1 and T2 mapping as measures of myocardial inflammation and oedema. Prospective randomised studies comparing blood-based biomarkers against EMBx and cMRI surveillance against EMBx have shown that the non-invasive methods are safe and much preferred by patients as they dramatically reduce the requirement for EMBx.