

CORRESPONDENCE

Rare case of squamous metaplasia arising in the endocardium of a previous biopsy site in a cardiac transplant recipient as a reparative response

To the Editor,

Cardiac transplantation remains the gold standard therapy for advanced heart failure. The orthotopic technique is employed by virtually all transplant centres, in which the recipient's heart is removed and replaced by donor organ.^{1,2} The contribution of pathology to the success of cardiac transplantation is well established.³ Cardiac transplant recipients are routinely monitored for rejection by endomyocardial biopsies (EMB) of the right ventricle. EMB is typically performed under local anaesthesia by passing a biptome through the right internal jugular vein across the

tricuspid valve and into the right ventricle. Sampling is usually performed on the fluoroscopic guidance along the interventricular septum.^{4,5} The biopsy material usually includes endocardium and myocardium with endocardium representing endothelial lined tissue with underlying bundles of smooth muscle and connective tissue and myocardium representing myocytes, interstitium and small intramyocardial blood vessels.⁶ Repeated biopsy of the same area of the right ventricle gives rise to changes, which include haemorrhage, granulation tissue formation, scarring and an associated inflammatory response.⁷ We describe a rare case of squamous metaplasia arising in the endothelium of an EMB resulting from repeated biopsy of the same site.

A 53-year-old female heart transplant recipient was biopsied for routine assessment of rejection. The histology revealed six portions of tissue representing endocardium and underlying myocardium (Fig. 1A). The endocardium appeared mildly thickened and somewhat hyalinised. The

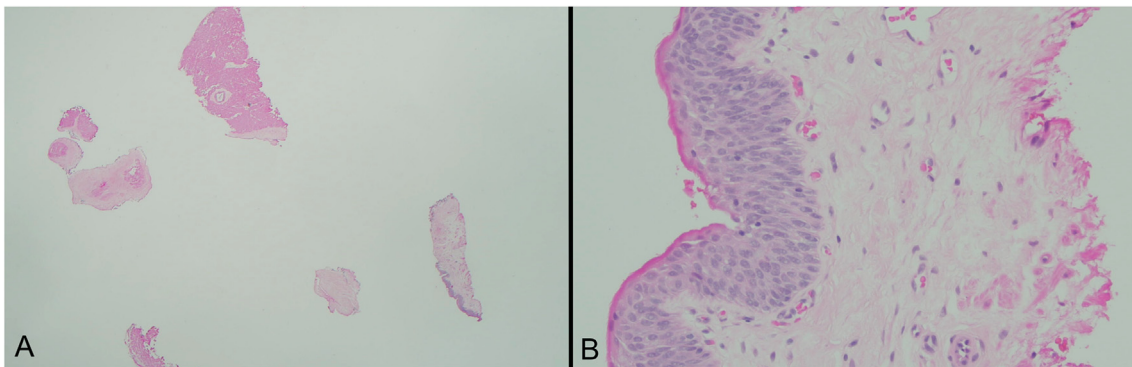


Fig. 1 (A) Biopsy tissue representing endocardium and underlying myocardium. (B) One fragment showed lining endothelium expanding into a multilayered, transitional type epithelium with underlying subepithelial connective tissue containing small bundles of smooth muscle.

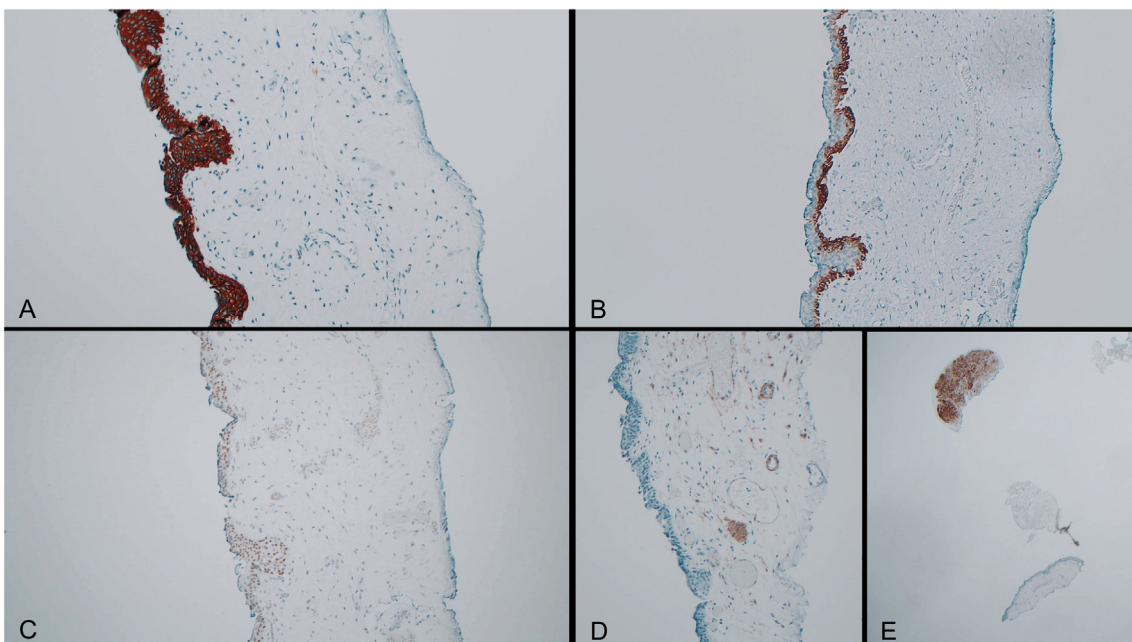


Fig. 2 Endothelial proliferation expressed (A) AE1/3, (B) CK5/6 and (C) P40. Subendocardial smooth muscle bundles expressed (D) SMA, and myocardium expressed (E) myogenin.

myocardium showed no evidence of necrosis or interstitial inflammation. The intramyocardial small blood vessels were identified within the myocardium and were histologically unremarkable. There was no significant interstitial fibrosis. However, one fragment showed lining endothelium expanding into a multilayered, transitional type epithelium with underlying subepithelial connective tissue containing small bundles of smooth muscle, confirming that this cellular proliferation was arising in the endothelium (Fig. 1B). Immunohistochemistry for epithelial lineage (AE1/3) squamous cell markers (CK5/6 and P40), mesothelial lineage (calretinin) and an endothelial marker (ERG) was carried out. In addition, a smooth muscle marker (SMA) and a muscle marker (myogenin) were carried out to identify the smooth muscle bundles in the subendocardial tissue. The cellular proliferation showed positive staining for AE1/3, CK5/6 and P40 stains (Fig. 2A–C) and no staining for calretinin and ERG, confirming squamous differentiation. The SMA highlighted the smooth muscle bundles in the subendocardium confirming the orientation of the tissue (Fig. 2D). The myogenin stain only highlighted the cardiac myocytes (Fig. 2E).

Metaplasia is a process whereby one type of mature tissue is replaced by another type of mature tissue not indigenous to that organ or tissue, which likely represents a reactive or reparative response to chronic injury or irritation.⁸ To the best of our knowledge, squamous metaplasia occurring in the endothelium in transplant biopsies has not previously been described and should not be mistaken for dysplasia or malignancy arising in the endocardium.

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