ST-elevation acute coronary syndrome in a patient after heart transplant

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Abstract

The accelerated process of vasculopathy in heart transplant (HTx) recipients is a well-known factor of increased morbidity and mortality among this subset of patients. Heart transplant patients with acute coronary syndrome (ACS) usually do not present with typical symptoms. ST elevation (STE) is a very rare presentation of ACS in HTx recipients. We report a case of a female HTx patient, in whom STE-ACS was diagnosed and was subsequently treated with primary percutaneous coronary intervention.

Key words: ST-elevation myocardial infarction, heart transplant, cardiac allograft vasculopathy.

Case report

The 55-year-old female patient underwent heart transplant (HTx) for heart failure secondary to hypertrophic cardiomyopathy 5 years ago. Immunosuppression consisted of tacrolimus, mycophenolate mofetil and corticosteroids up to 12 months after HTx.

The early post-transplantation course had been complicated by acute cellular rejection (ACR) grade 2R (according to ISHLT grading scale) treated with methylprednisolone boluses and with cytomegalovirus infection. The patient was also treated due to sinus node dysfunction with implantation of a dual-chamber pacemaker. The patient remained without classical risk factors for atherosclerosis (no-smoker, body mass index 23 kg/m^2, normal blood pressure and lipid profile).

Angiography done 1 year after HTx showed normal coronary arteries and 3 years after surgery only discrete lesions (Figure 1). Neither ACR nor antibody-mediated rejection were found in protocol myocardial biopsy done 3 years after HTx.

The patient was admitted in the 5th year after HTx to hospital due to unspecific weakness and left arm numbness for 4 days.

ECG revealed ST-segment elevation (STE) in V4–V6 leads along with Q wave. Maximal troponin-T rise was 5.2 ng/ml (UNL 0.014 ng/ml). ST elevation-acute coronary syndrome (STE-ACS) was diagnosed.

Emergent angiography revealed left anterior descending coronary artery (LAD) occlusion in its proximal segment and 70–80% stenosis in the proximal right coronary artery (RCA) (Figure 2). A loading dose of prasugrel was administered and immediate percutaneous coronary intervention (PCI) of the LAD was performed. After opening the occluded LAD segment and predilatation, a 2.5 mm × 28 mm everolimus-eluting stent was implanted at 14 atm. A good angiographic result with TIMI 3 flow was achieved (Figure 3).

Echocardiography revealed akinesis of apical and mid segments of the anterior wall, septum and lateral wall with ejection fraction (EF) of 30% (as compared to normal left ventricular function 6 months ago) and mild improvement 1 month after ACS (EF 35–40%).

Recovery was uncomplicated. One month later the patient underwent elective PCI of the RCA with implantation of a 2.75 mm × 22 mm zotarolimus-eluting stent.

The patient remains under strict clinical vigilance for possible progression of vasculopathy.

Discussion

Acute coronary syndrome in HTx patients is uncommon [1], and reports of STE presentation of ACS are ca-

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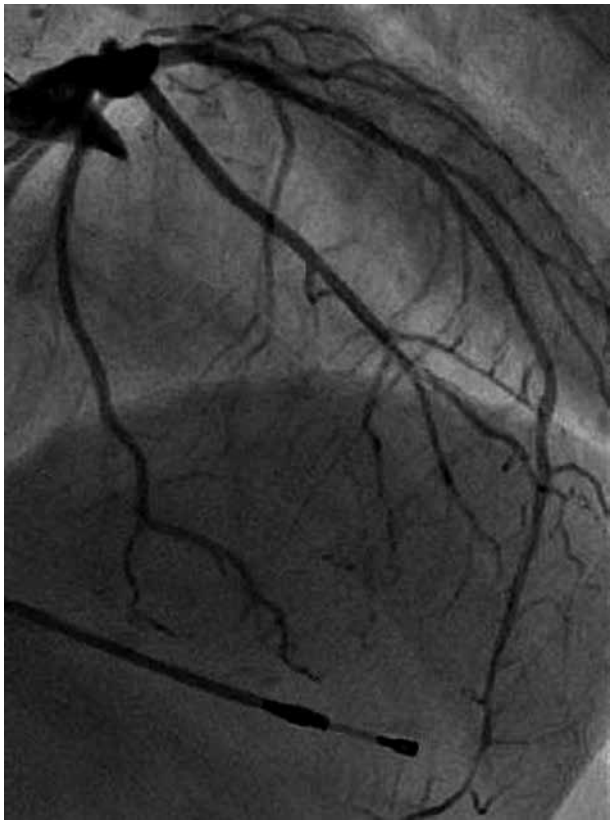

Figure 1. Control coronary angiography in 2011 showing only discrete narrowings

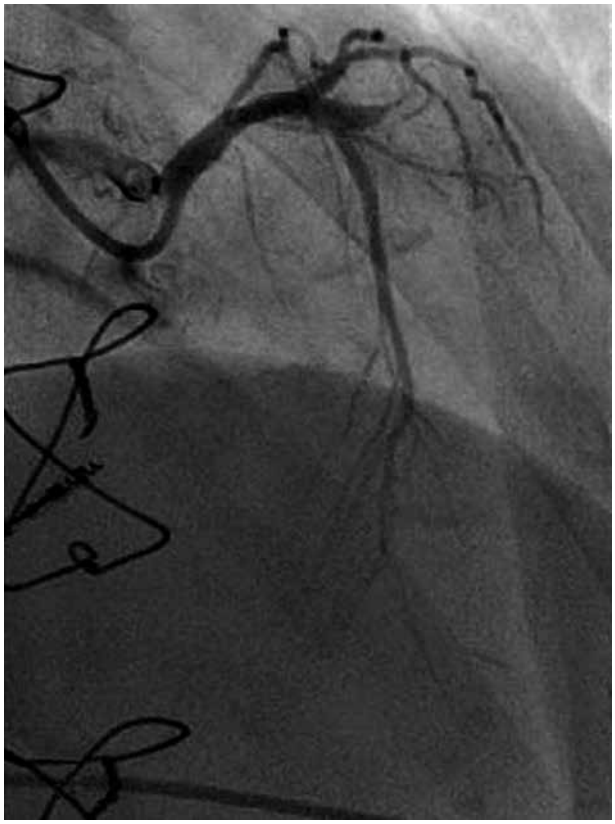

Figure 2. Occluded proximal segment of the left anterior descending coronary artery in 2013

suistic [2–4]. In the first systematic review of ACS in HTx patients, unspecified ST changes were observed in 5 of 22 patients [5]. A possible explanation could be that cardiac allograft vasculopathy (CAV) differs from traditional coronary atherosclerosis. Intimal smooth muscle hyperplasia is diffuse and involves the entire circumference. Microscopically it is characterized by intense cellular proliferation – mainly of smooth muscle cells and inflammatory infiltrates (lymphocytes and monocytes). Often vascular changes also involve the distal part of the coronary tree. The prevalence of CAV remains as high as 30% at 5 years, and 45% at 8 years after HTx, limiting survival [6]. Thus prevention of CAV is of utmost importance. Selected statins may have a beneficial effect on CAV [7]. Tacrolimus might have an advantage over cyclosporine A for endothelium function, but the superior freedom from PCI remains questioned [8].

Secondly, as a result of cardiac denervation, HTx patients with ACS present with rather atypical symptoms and typical symptoms during ACS are very rare [9]. The most frequently reported symptom was weakness followed by dyspnea [10].

Restenosis rates after elective PCI for CAV are higher as compared to PCI in native coronary arteries [11]. The observations from single-center retrospective studies

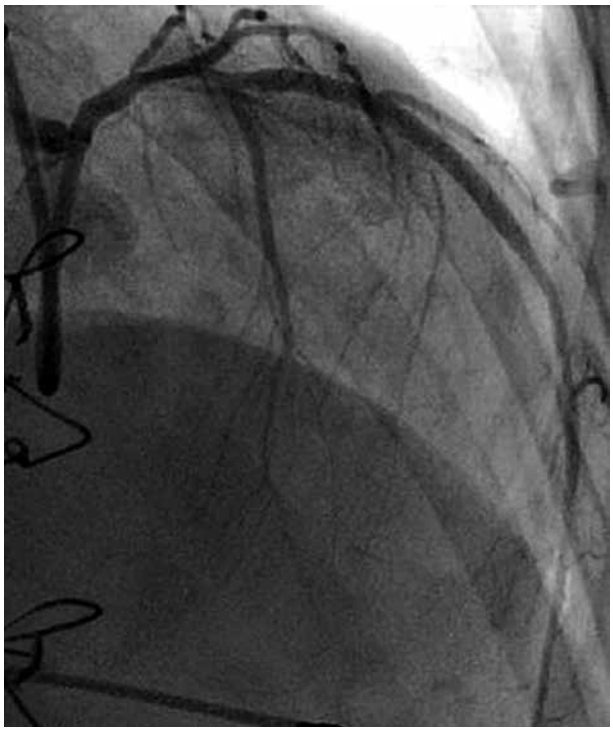

Figure 3. Left anterior descending coronary artery after stent implantation

indicate that drug-eluting stents are characterized by a lower rate of in-stent-restenosis than bare metal stents in CAV [12]; however, the results are contradictory [13] and the beneficial effect of the drug is questioned [14]. The follow-up observations after PCI for ACS in HTx patients are limited to only single reports [4].

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