Native tricuspid valve endocarditis in a young woman

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A 30-year-old woman was admitted having suffered from fever and malaise for about a month. During this period no drugs were taken, except antipyretics. On examination she was febrile (37.8°C) and a systolic ejection type murmur was heard along the left sternal border. Haemoglobin was 9.4 g/dl, white cell count 6.03 ×10⁹/l (80% neutrophils), erythrocyte sedimentation rate 111 mm/h and C-reactive protein 52 mg/l. Chest X-ray was normal. The patient underwent transthoracic and transoesophageal echocardiography, revealing a vegetation of 1.36 × 1.13 cm on the anterior tricuspid leaflet, which prolapsed freely between the atrium and ventricle (figure). The leaflet coaptation point was lost, resulting in a moderate to severe valve regurgitation. Nine blood cultures were obtained and all yielded Staphylococcus epidermidis sensitive to methicillin.

The patient was neither a drug abuser nor an alcoholic. Serological tests for HIV and viral hepatitis were negative. She had no history of rheumatic fever and had no dental treatment, abortion or genital infection in the last six months. She had pierced her ears a few weeks prior to the appearance of the symptoms. Her left ear lobe around the hole was erythematous with local swelling and painful when pressed and there was a small fistula on the back of the ear lobe. Three separate cultures of fistula contents yielded the same strain of S epidermidis.

Dicloxacilline, 2 g six times daily, was administered for 6 weeks, resulting in rapid improvement of the patient's general condition. During hospitalisation, no symptoms or signs of right heart failure or septic pulmonary embolism were present. Perfusion and ventilation lung scanning were normal. On discharge the patient had negative blood cultures. A repeat echocardiography was unchanged. On the basis of the size of the vegetation and the severe regurgitation, vegetation and reconstruction of the valve were recommended, but the patient declined.

Figure Two-dimensional echocardiogram. Left: vegetation prolapsed into right atrium. Right: tricuspid regurgitant jet on the upper corner and its continuous Doppler signal (RA: right atrium, RV: right ventricle, Veg: vegetation, CS: coronary sinus)

Questions

1. What is the most common predisposing factor for tricuspid valve endocarditis?
2. What are the main differences between right-sided and left-sided endocarditis?
**Answers**

**QUESTION 1**

Parenteral drug abuse is the most common predisposing factor for native tricuspid valve endocarditis (NTVE). This explains the increased incidence of NTVE during the last decades.

**QUESTION 2**

In right-sided endocarditis there is usually no pre-existing heart disease, *Staphylococcus* is the most common pathogen, pneumonic manifestations are predominant, congestive heart failure is unusual, medical therapy has high success and surgery is requiring only in 25% of patients. In contrast, congenital heart disease is common in left-sided endocarditis, *Streptococcus* is the most common pathogen, systemic embolizations are predominant, congestive heart failure is common and prognosis is poor with a higher rate of surgery.

**Discussion**

Isolated NTVE occurs in about 5–10% of cases of infective endocarditis and is mainly a disease of drug addicts. In non-addicts, the published cases of NTVE with structurally normal hearts are limited and associated with indwelling intravenous catheters, immune deficiency, alcoholism, and inadequately treated genital and skin sepsis.

The commonest isolated pathogen is *Staphylococcus aureus*. *S epidermidis*, the causative organism in our case, is the most commonly isolated pathogen from patients with prosthetic valve endocarditis, but infrequently causes NTVE. When *S epidermidis* is isolated, physicians have to decide whether this is a real infection or contamination. A real infection can be differentiated from contamination by detection on two or more isolated consecutive cultures.

Clinical recognition is often delayed by the fact that the pulmonary manifestations, such as fever, chest pain, cough, and haemoptysis, are more commonly due to septic pulmonary emboli. The murmur of tricuspid regurgitation is often missed. Echocardiography confirms the diagnosis of NTVE by revealing tricuspid vegetations and regurgitation. Trans-thoracic echocardiography is the gold standard; transoesophageal echocardiography does not improve the diagnostic accuracy.

The prognosis of NTVE is favourable, with only 25% of patients requiring surgical intervention. Most cases respond to medical therapy with a combination of penicillinase-resistant penicillin and aminoglycosides. Definitive indications for surgery are persistent pyrexia and right-sided congestive heart failure. Large vegetation size is a probable indication for surgery. There are three options for surgical intervention: valvulectomy, with or without valve replacement, and valvectomy with reconstruction of the valve, especially if the infection is localised; valvectomy is the operation of choice.

Our patient was not a drug addict, the pathogen was *S epidermidis* and the port of entry was soft tissue sepsis due to ear-piercing. To our knowledge, this is the first report of NTVE due to ear-piercing. This is of particular interest given the popularity of ear-piercing. The special anatomy of the ear lobe with its good blood supply to the skin and poor supply to fatty tissue and the rich veinplexus might predispose to the creation of infective reactive granulomas and to the haematogenous spread of infection, especially if the equipment used is not properly sterilised. We therefore suggest that chemoprophylaxis should be considered in subjects with pre-existing valve disease who wish to have their ears pierced.

**Final diagnosis**

Native tricuspid valve endocarditis following ear-piercing.

**Keywords:** native tricuspid valve endocarditis; *Staphylococcus epidermidis*; ear-piercing

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