Eustachian valve endocarditis

Isidre Vilacosta, J Alberto San Roman, Victor Roca

Abstract

M mode and cross sectional echocardiography showed a highly mobile globular pedunculated mass (3.0 cm long with a maximum diameter of 1.5 cm) attached to the eustachian valve in a heroin addict with staphylococcal endocarditis.

Infective endocarditis in drug misusers was first reported in the 1930s.¹ Since then, right sided infective endocarditis has become much commoner.²⁻⁴ Vegetations are the hallmark of endocarditis. In 1973 Dillon *et al* reported the first demonstration by echocardiography of valvar vegetations.³ The echocardiographic findings in right sided endocarditis have been widely described.⁶⁻⁸ We report the M mode and cross sectional echocardiographic findings in a patient with a vegetation of the eustachian valve.

Case report

A 23 year old male heroin addict was admitted to hospital with chills, malaise, right pleuritic chest pain, and fever. On physical examination blood pressure was 120/70 mm Hg, pulse 100 beats/min, respiratory rate 20/min, and temperature 38.8°C. The conjunctivae and the optical fundi were normal. There was no jugular venous distension. Fine rales were heard over the right lung base. Cardiac examination showed a normal sized heart. The first heart sound was normal and the second sound was split physiologically. Neither the liver nor the spleen was palpable. There were no petechiae, splinter haemorrhages, or Osler nodes. The haemoglobin concentration was 128 g/l and the white cell count was $15.8 \times 10^9/l$ with a shift to the left. *Staphylococcus aureus* was given in six consecutive blood cultures. A chest x ray film showed right nodular densities consistent with septic pulmonary emboli. An electrocardiogram showed sinus tachycardia. The M mode and cross sectional echocardiograms showed evidence of a highly mobile mass (3.0 cm long and with a maximum diameter of 1.5 cm) that was globular and pedunculated and attached to the eustachian valve (figs 1 and 2). The other cardiac valves were normal.

Staphylococcal endocarditis affecting the eustachian valve was diagnosed and the patient was treated with oxacillin and gentamicin for 6 weeks. The pleuritic chest pain present on admission disappeared by the fifth hospital day. The fever, leucocytosis, and the radiographic signs of lung disease resolved.

Figure 1 (A) Cross sectional echocardiogram in the parasternal view showing the right ventricular inflow tract. A large, pedunculated mass (arrow) projected into the right atrium (AD) from the junction of the inferior vena cava and the right atrium. VD, right ventricle. (B) Cross sectional echocardiogram in the subcostal view and sagittal projection. A pedunculated mass hung from the eustachian valve (arrow). VCI, inferior vena cava; VCS, superior vena cava.

A repeat cross sectional echocardiographic study before discharge again showed the vegetation, which seemed to be smaller. On re-evaluation five months later, the patient was symptom free; the vegetation persisted at the same site but was smaller than before.

Discussion

The eustachian valve or valve of the inferior vena cava is a normal remnant of the right valve of the sinus venosus. In the embryo this valve directs blood from the inferior vena cava into the left atrium through the foramen ovale.⁹ Its

Division of
Cardiology, Hospital
Universitario de San
Carlos, Ciudad
Universitaria, Madrid,
Spain
I Vilacosta
J A San Roman
Division of Infectious
Diseases, Hospital
Universitario de San
Carlos, Ciudad
Universitaria, Madrid,
Spain
V Roca

Correspondence to
Dr Isidre Vilacosta,
Alcántara 57, 6^a, I,
28006 Madrid, Spain.

Figure 2 M-mode echocardiogram of the right ventricular inflow tract showing an abnormal cluster of dense, highly mobile and shaggy echoes (*) within the right atrium. The tricuspid valve (VT) appeared to be normal.

persistence may create or simulate cardiac disease.¹⁰⁻¹² The anatomical and echocardiographic features of this valve have been described.^{13,14} Successful management of bacterial endocarditis depends on early recognition and prompt treatment. In right sided endocarditis there are often no definitive auscultatory findings and this makes diagnosis difficult. Echocardiography is an established non-invasive technique for detecting vegetations, haemodynamic sequelae, and other complications in patients with infective endocarditis.¹⁵⁻¹⁸

Edwards *et al* also reported a patient with eustachian valve endocarditis.¹⁹ Unfortunately in their patient the eustachian valve was not specifically sought during the echocardiographic examination. Although surgical or pathological confirmation was not available in our patient, the triad of heroin addiction, staphylococcal septicaemia, and pulmonary infarction without evidence of peripheral venous disease supported the diagnosis of eustachian valve endocarditis.

Necropsy studies of patients with right sided infective endocarditis and of opiate addicts showed that the affected valves were nearly always anatomically normal before the onset of the cardiac infection, which was usually caused by highly virulent organisms, especially *Staphylococcus aureus*.⁸ Vegetations associated with right sided endocarditis tend to be large.¹⁷ Echocardiographically confirmed large vegetations do not usually disappear after medical

treatment. All these features were seen in our patient.

Our patient and that of Edwards *et al* suggest that when bacterial endocarditis is suspected, especially in intravenous drug misusers, the eustachian valve should be echocardiographically examined for vegetations.

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