

## Cardiac Imaging

# Bacterial Endocarditis of the Mitral Valve with Dual Location

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**I**nfectious endocarditis (IE) is defined as a microbial infection of the endothelial surface of the myocardium. The characteristic myocardial lesion, vegetation, consists of an amorphous mass of platelets and fibroids of varying size, within which are trapped large numbers of micro-organisms and rather few inflammatory cells.

The heart valves are more often affected than are other intracardiac structures, with the predominant location being the mitral valve in women and the aortic valve in men, followed by the tricuspid valve in intravenous drug users.<sup>1-3</sup>

The incidence of IE in the general population ranges from 6 to 11 cases per 100,000, with a preference for men and for people aged over 45 years. From 36% to 75% of patients with native valve endocarditis have risk factors, such as rheumatic heart disease, congenital heart disease, mitral valve prolapse, degenerative heart disease, asymmetrical hypertrophy of the interventricular septum, or intravenous drug use.<sup>1-3</sup>

The complications of IE are mainly related to systemic emboli made of septic material from the vegetations. The incidence of emboli reaches 40% in patients with IE, while in post mortem studies it can be as high as 65%.<sup>3-5</sup>

The risk of embolic events in IE is directly proportional to the infective power of the micro-organism (e.g. *Staphylococcus*), the size and mobility of the vegeta-

tions, the time since the infection became established, and the valve involved (the mitral location entails greater risk than the aortic). Vegetations of the anterior mitral valve leaflet are especially dangerous.<sup>5-8</sup>

In the case of the patient whose echocardiograms are shown here, the unusual feature was the dual location of vegetations on both mitral valve leaflets.

A man aged 59 years, hypertensive, with mild hectic fever (as high as 37.5° C) and dyspnoea over the preceding month, was admitted unconscious (Glasgow Coma Scale 3) after an episode of complete syncope. On his fifth day of hospitalisation he exhibited a 39° C fever with chills, together with a picture of diffuse intravascular coagulation with consequent multiple organ failure and septic shock.

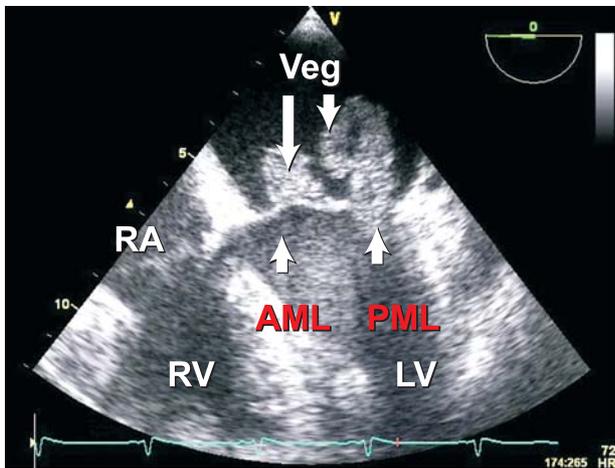
The clinical examination revealed a systolic mitral regurgitation murmur, basal rales, and petechial haemorrhagic dermal infiltrations.

Laboratory tests showed leukocytosis, hepatic and renal dysfunction, and coagulation abnormalities, increased erythrocyte sedimentation rate and elevated C-reactive protein. Blood cultures (two) were positive for *Staphylococcus aureus*.

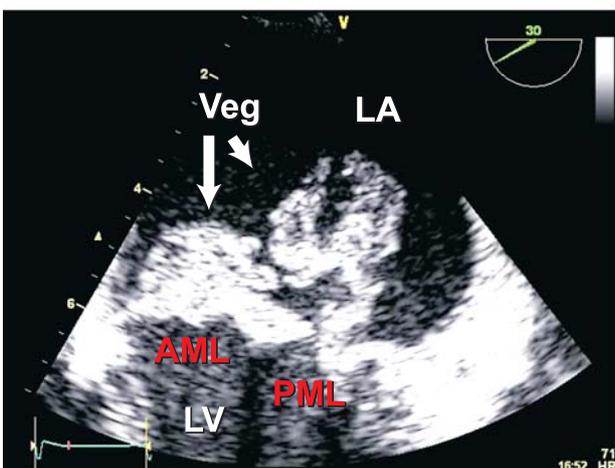
A transoesophageal echocardiographic examination (TOE) was carried out. The sensitivity of TOE in detecting vegetations in patients with a strong clinical suspicion of

native valve endocarditis ranges between 85% and 95%, in contrast to transthoracic echocardiography, whose sensitivity reaches only 65%.<sup>9-11</sup> The TOE study showed large dilatation of the left atrium with moderately compromised left ventricular function, as well as severe mitral regurgitation. Morphologically, two large-sized, mobile lesions were seen on the anterior and posterior mitral valve leaflets, arising from the atrial surfaces of the leaflets (Figures 1-3).

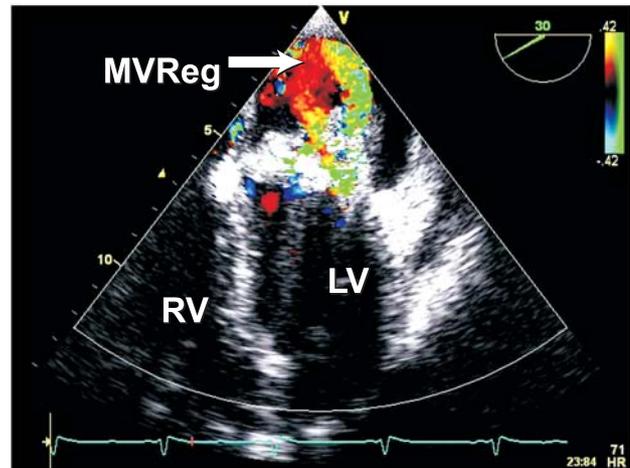
Based on the history, laboratory and echocardiographic findings, the diagnosis established was mitral valve endocarditis.



**Figure 1.** Transoesophageal echocardiography at 0 degrees in the mid-oesophageal position showing the vegetations (Veg) on the anterior (AML) and posterior (PML) mitral valve leaflets. RA – right atrium; LV – left ventricle; RV right ventricle.



**Figure 2.** Transoesophageal echocardiography at 30 degrees in the mid-oesophageal position showing an enlarged view of the vegetations on both mitral leaflets. Note the abnormal configuration of the posterior mitral leaflet vegetation. LA – left atrium; other abbreviations as in figure 1.



**Figure 3.** Colour Doppler imaging of severe mitral valve regurgitation (MVRReg). Other abbreviations as in figure 1.

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