Isolated posterior mitral valve cleft: diagnosis by real-time three-dimensional transoesophageal echocardiography

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We report a case of an isolated cleft mitral valve with two clefts in the posterior leaflet. Our case adds to the few reports of posterior and multiple mitral valve clefts and, to our knowledge, is one of the first using real-time transoesophageal three-dimensional echocardiography for the assessment of isolated cleft mitral valve.

Keywords

Posterior mitral valve cleft • Multiples mitral valve clefts • Transoesophageal echocardiography • Real-time three-dimensional echocardiography

A 59-year-old patient presented with progressive shortness of breath since 3 weeks. The ECG showed atrial fibrillation and clinical examination revealed a systolic murmur suggesting mitral regurgitation. Transthoracic echocardiography showed severe eccentric mitral regurgitation and posterior mitral valve prolapse. Transoesophageal echocardiography revealed prolapse of the posterior mitral valve leaflet near the anterolateral commissure with ruptured chordae generating severe eccentric mitral regurgitation (Figure 1A–C). Furthermore, the transgastric short-axis view of the mitral valve suggested the existence of a cleft in the mid-portion of the posterior leaflet (white arrow, Figure 2A). Real-time transoesophageal three-dimensional echocardiography (3DE) confirmed prolapse with ruptured chordae of the anterolateral scallop (asterisk, Figure 2B) and a large cleft in the mid-portion of the posterior leaflet (white arrow, Figure 2B). The 3DE further revealed an additional cleft in the posterior leaflet between the mid-portion and the posteromedial scallop (black arrow, Figure 2B). In diastole, the valve had a ‘four-leaflet’ appearance (see Supplementary data online, Movie). Surgery confirmed the echocardiographic findings (Figure 2C).

Mitral valve clefts are an uncommon aetiology of mitral regurgitation and occur, in general, in the anterior mitral valve leaflet as part of an association involving defects in the atrioventricular septum with the absence of a common AV junction, referred to as left-sided AV valve cleft and mostly diagnosed in childhood. Less frequently, mitral clefts are observed as an isolated abnormality of an otherwise normally structured mitral valve, referred to as the so-called isolated cleft mitral valve. Clefts in the posterior leaflet are rarely reported and especially multiple clefts are very uncommon. Echocardiographic diagnosis can be difficult, and clefts may be detected for the first time during surgery for severe mitral regurgitation. In our patient, imaging with the real-time transoesophageal 3DE had a complementary diagnostic value as it allows more precise delineation of the mitral valve.

Supplementary data

Supplementary data are available at European Journal of Echocardiography online.

Conflict of interest: none declared.
Figure 1  Transoesophageal echocardiography showing prolapse of the posterior mitral valve leaflet near the anterolateral commissure (A, white arrow) with ruptured chordae (B, white arrow) generating severe eccentric mitral regurgitation (C, white arrow).
Figure 2 Transgastric short-axis view of the mitral valve suggesting the existence of a cleft in the mid-portion of the posterior leaflet (A, white arrow). Real-time transoesophageal three-dimensional echocardiography (3DE) showing prolapse with ruptured chordae of the anterolateral scallop (B, asterisk), a large cleft in the mid-portion of the posterior leaflet (B, white arrow) and an additional cleft in the posterior leaflet between the mid-portion and the posteromedial scallop (B, black arrow). Surgery confirmed the echocardiographic findings (C, asterisk and white arrow). AL, anterior leaflet; ALC, anterolateral commissure; PL, posterior leaflet; PMC, posteromedial commissure.