Clinical picture

Left heart border straightening in severe mitral stenosis

A 27-year-old Hispanic female, in second trimester of her pregnancy, presented to our emergency department (ER) with gradually worsening shortness of breath. The physical exam was significant for a loud S1, mid-diastolic murmur of mitral stenosis and basilar crackles. A chest X-ray was performed that showed bilateral pulmonary edema and straightening of the left heart border (Figure 1). The echocardiogram further revealed left atrial enlargement and the classic ‘hockey-stick’ appearance of the anterior leaflet of mitral valve, consistent with rheumatic mitral stenosis (Figure 2). The patient was admitted to the cardiac intensive care unit and was treated with diuretics. The pregnancy, however, was deemed non-viable and had to be terminated. The patient made a complete recovery and subsequently underwent a successful mitral valve replacement.

The structures forming the left heart border on chest X-ray, the aortic knuckle, dilated pulmonary artery, prominent left atrial appendage and left ventricle align in a straight line in severe mitral stenosis and give the impression of straightening of the left heart border or ‘mitralization’ of the heart.

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Figure 1. Chest X-ray showing straightening of the left heart border
Figure 2. Parasternal long axis view showing the classic ‘hockey-stick’ appearance of the anterior leaflet of mitral valve