

Case reports

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Anomalous bands in the heart

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An anomalous band, unique in its extent, has been observed in a 54-year-old man who died as a result of acute myocardial infarction. The published reports have been briefly reviewed. The band in all 19 previously reported cases inserted into the anterior or posterior mitral valve leaflets or straddled the left atrial cavity. An embryological explanation has been put forward.

Anomalous bands in the heart are extremely rare. We wish to present a patient in whom such a band was present. In cases described in published reports, the band was localized within the left atrium, either straddling the cavity or having an attachment to the anterior or posterior mitral valve cusp. The band in our case, extending from the left atrium to the root of the aorta, is unique in its extent.

Clinical history

A man of 54 years who had had no previous history of any cardiac condition or hypertension was suddenly seized in the early morning with severe pain in the chest radiating down the left arm. He was shocked and in severe pain with blood pressure of 100/70 mm Hg. The doctor accompanied him in the ambulance to the hospital, giving external cardiac massage, but the patient was dead on arrival at the hospital.

Postmortem examination showed generalized congestion but no other abnormality except in the heart.

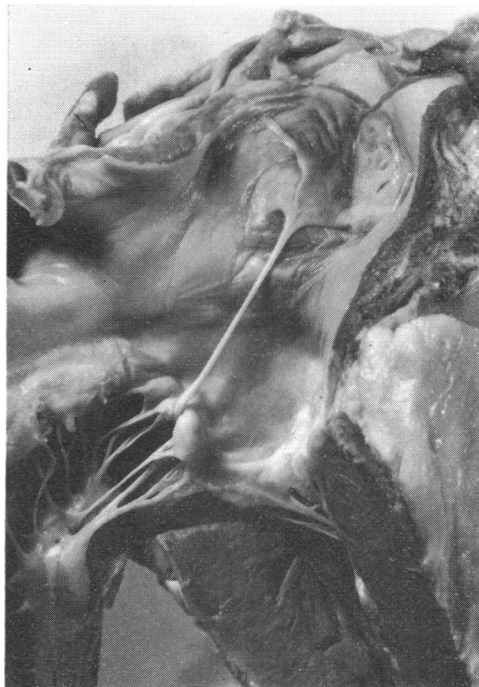
Pathology of the heart

Macroscopical appearances The heart weighed 411 g (normal weight for height of patient 300-360 g).

External appearances The pericardium showed no significant abnormality. On opening the heart, an anomalous band, extending from the region of the foramen ovale of the left atrium and curving round the anterior leaflet of the mitral valve, was present (Fig. 1). It was attached to the root of the aorta (Fig. 2). The total length of this band measured 9.7 cm and varied in thickness between 3 and 1 mm. It was not attached to the anterior mitral valve leaflet; the thickest part of the anomalous band was in that area, apparently not interfering with the normal function of the valve leaflet.

Myocardium The myocardium showed no abnormal macroscopical changes. The left ventricle measured 19 mm in thickness (upper limit of normal 15 mm). The right ventricle at the conus measured 15 mm (upper limit of normal 3 mm).

FIG. 1 *The left atrium has been opened to show an anomalous band arising from the region of the fossa ovalis. The close proximity to the anterior leaflet of the mitral valve is well seen.*



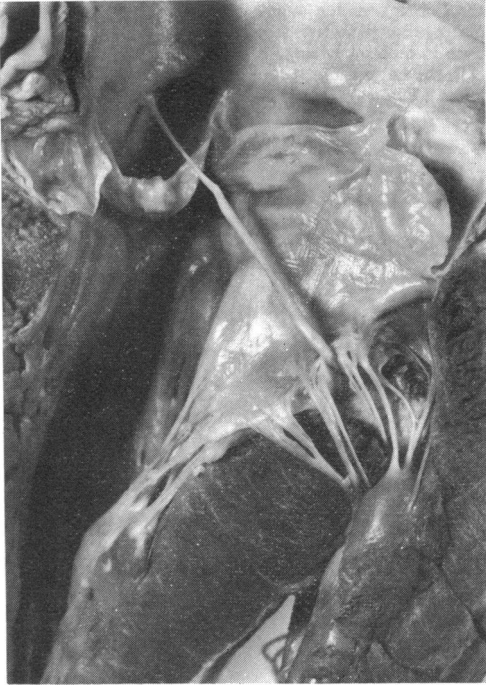


FIG. 2 The left ventricular outflow tract of the left ventricle is displayed to show a continuation of this anomalous band and its attachment to the root of the aorta.

The endocardium showed no abnormality. All valves were normal. The measurements in the fixed state were as follows: tricuspid valve, 97 mm; pulmonary valve, 71 mm; mitral valve, 91 mm; aortic valve, 65 mm.

Coronary arteries The right coronary artery showed total occlusion by a recent thrombus. This was the cause of death in this patient.

Discussion

The cause of death in this patient was clearly related to the myocardial infarction and not in any way to the anomalous band which was the interesting feature in this heart. It is a rare finding and this is the first case where such an extensive anomalous band has been observed.

Previous reports on shorter bands have been published (Preisz, 1890; Rolleston, 1896; Bredt, 1936; and McNamara, Baker, and Costich, 1947). Knoblich and Ducey (1962) reported one case of their own and reviewed the published reports, collecting 17 previously reported cases. In most instances the anomalous band was fibrous or fibromuscular in structure, connecting the region of the foramen ovale to the anterior or pos-

terior mitral valve leaflets. McNamara *et al.* (1947) described a case where a band extended across the left atrium just above the mitral valve. It was suggested by these authors that this band represented a congenital abnormality.

The significance of these bands is uncertain. Clinically they appear to be asymptomatic and do not produce a cardiac murmur. Hudson (1965) reviewed the subject of cor triatriatum, under which heading he included anomalous bands which were considered to be the mildest form of the supernumerary division of the atrium. This review was illustrated by one case showing an anomalous band. The more usual appearances were in the form of membranes which may be situated either at, over, or below the foramen ovale. Lev (1953) described three forms of abnormal partition of the left atrium, the three types being distinguished by the entrance of the venae cavae and pulmonary veins. The embryological explanation is that the abnormal septum is likely to be part of the septum primum, which is deviated to the left side to form an extra subdivision of the left atrium.

A similar theory had been advanced to explain the anomalous bands inserting into the mitral valve cusps. Fusion of part of the septum primum with the septum secundum had failed to occur. The caudal part of the septum primum became drawn out by the developing mitral valve to which it became attached. The unique extent of the band in the patient reported here can be explained by a similar underlying process. In this instance, however, the sequence of events must have been disturbed and the aberrant band of the septum primum became disassociated and connected to the spiral septum. This could explain its attachment to the root of the aorta. The formation of the valvular components of the heart had pushed this band caudally without an attachment having occurred.

This finding is an interesting congenital abnormality which is clinically insignificant.

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