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Case Report

Myocardial Bridging - An Incidental Finding at Autopsy

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ABSTRACT

A congenital coronary pathology described as a segment of coronary artery which courses through the myocardial wall beneath the muscle bridge is myocardial bridging. Although the myocardial bridging prognosis is benign, in medical literature have been also reported as sudden death. A 29-year-old male was died suddenly with the history of difficulty in breathing before death. The left anterior descending coronary artery was detected embedded deeply in the myocardium 1.8 cm from its coronary ostial origin. Also found anterior wall healed myocardial infarction. We analyzed sudden death case occurred because of myocardial bridging and the pathophysiological mechanisms in the light of medico-legal literature.

Keywords: Acute coronary syndrome, Myocardial bridging, Myocardial infarction, Autopsy

INTRODUCTION

Coronary arteries are normally distributed over the epicardial surface of the heart; however, they occasionally run a segmental intramyocardial course-Myocardial bridging. The myocardial bridge is an anomaly characterized by a typical intramyocardial route of a segment of one of the major coronary arteries. This anomaly is more frequent than previously thought, and its reported incidence varies from 1.5% to 16% [1]. Myocardial bridging usually has a benign prognosis, but some cases associated with myocardial ischemia, infarction, and sudden death have been reported [2-6].

The present case report is a good example of the clinical effects of a myocardial bridge. It is therefore interesting not only because of the rarity of the case, but also because it brings the attention of cardiologists to an anomaly that is often neglected. Considering the epidemiological prevalence of this anomaly, clinical suspicion of a myocardial bridge would be warranted in all cases of typical or atypical chest pain in subjects who have a low probability of atherosclerosis because they are free from the traditional cardiovascular risk factors, particularly in the young.

CASE PRESENTATION

A 29 years old male, died suddenly with a history of difficulty in breathing & chest pain before death. We received autopsy organs of the above patient of whole heart, lungs pieces, liver pieces, spleen pieces, kidney pieces, Brain pieces. On gross examination of heart, left anterior descending artery (LAD) was situated in

pericardial fat after its origin for 0.8 cm, it was tunneled in the myocardium and covered by 0.5 cm thick muscle layer for 1 cm of its course- Myocardial bridging (Figure 1). Rest of the artery distally was again situated in fat and showed patent lumen. Serial cut sections through myocardium showed white fibrotic area on the anterior wall, adjacent to myocardial bridging.

On microscopic examination, sections studied through LAD from its origin, up to 0.8 cm showed an artery situated in pericardial fat with patent lumen. LAD, 1.3 cm (Figure 2) from origin up to 1.8 cm showed artery situated in and covered by overlying muscle with patent lumen - Myocardial bridging (Figure 3). The rest of the course of LAD showed arteries in pericardial fat with patent lumen. Myocardium showed an area of fibrosis adjacent to myocardial bridging of LAD on anterior wall and a small area of interstitial fibrosis - Anterior wall healed myocardial infarction (Figure 4).

Figure 1: Gross photograph shows LAD 0.5 cm in the myocardium, 1cm away from its course

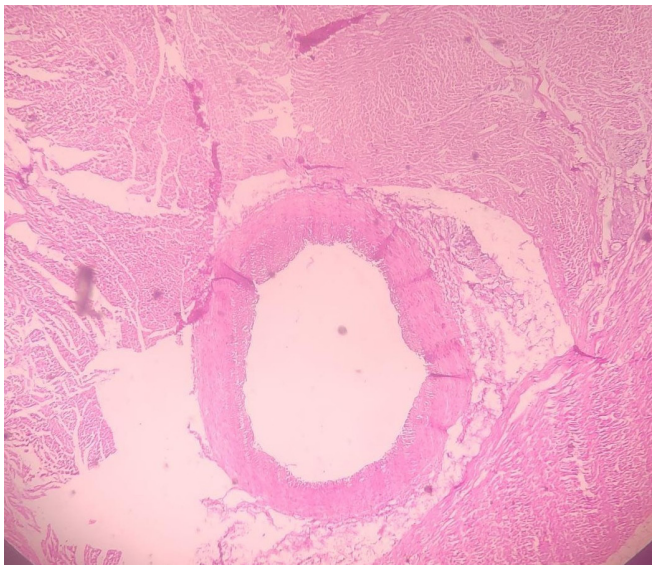

Figure 2: Microphotograph (H&E Stain) shows LAD 1.3 cm from origin covered by muscle

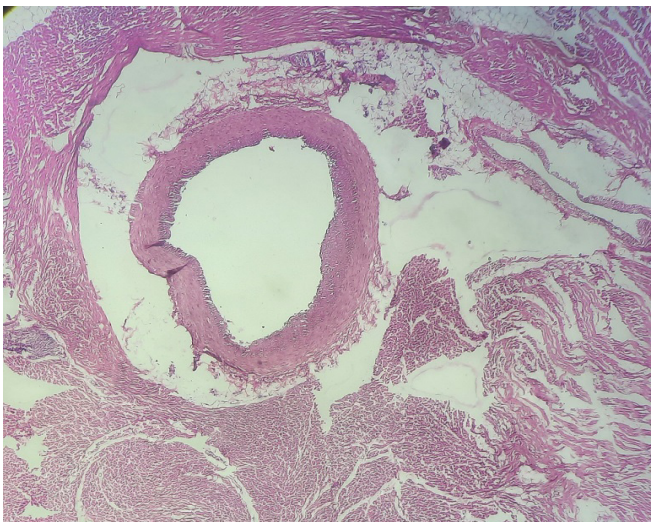

Figure 3: Microphotograph (H&E Stain) shows LAD 1.8 Cm from origin covered by muscle

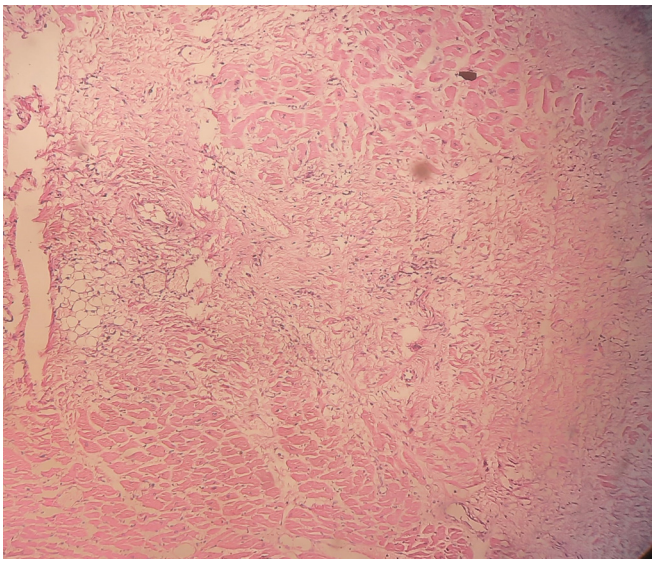

Figure 4: Microphotograph (H&E Stain) shows interstitial fibrosis –Healed myocardial infarction

DISCUSSION

On coronary arteriography myocardial bridging can be seen as an incidental finding. Its prevalence at 0.5 to 33% of all cases reported in previous studies [7]. Myocardial bridging rarely causes myocardial ischemia [8]. Also, it is often considered as a simple variant of the normal anatomy of coronary arteries. But previous reports have demonstrated its pathologic potential. The most frequent location of myocardial bridging is middle segment of the left anterior descending coronary artery. However, bridging on the circumflex branch of the left coronary artery, and right coronary arteries have been also reported [9-11]. In our case the left anterior descending coronary artery penetrated into myocardial muscle 1 cm proximal to its origin, and coursed intramural for 1.8 cm.

Kracoff *et al*. claimed the presence of a potential correlation between myocardial bridging, and arrhythmia in a 35-year-old male patient with newly onset angina, and recurrent attacks of syncope, which were firstly documented by electrophysiological methods [12].

As is known already, clinical diagnosis of myocardial bridging is impossible. Therefore, young individuals consulted to the hospital with chest pain, and similar cardiac complaints should be examined in detail. Besides, as is seen in our young patient with newly onset angina who was lost with a sudden death, it should not be forgotten that in suspect cases without any apparent cause of death, should be examined more carefully as for the presence of myocardial bridging.

To conclude, the prognosis of patients with myocardial bridges is not as benign as it was believed to be in the past. Clinical consequences of myocardial bridging range from angina to acute coronary syndrome to sudden cardiac death.

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