AOJ Emergency and Internal Medicine

Case Report

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Sudden Cardiac Arrest Caused by Coronary Bridging in a Malignant Hypertensive Patient

Volume 1 Issue 2 – 2023

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Received: November 05, 2023 **Published:** December 11, 2023

Citation: Fuat Polat. Sudden Cardiac Arrest Caused by Coronary Bridging in a Malignant Hypertensive Patient. AOJ Emerg and Int Med. 2023;1(2):18–21.

A 66-year-old female patient with a 5-year history of hypertension experienced chest pain and subsequently suffered sudden cardiac arrest. Cardiopulmonary resuscitation was administered, and she was transported to the emergency unit by ambulance. In the emergency area, an electrocardiogram revealed right bundle branch block and an atrial fibrillation rhythm (Figure 1A). Her blood pressure measured 220/120 mmHg. Echocardiography in the emergency unit measured the interventricular septum thickness at 13.4 mm (Figure 1B). The patient, who was intubated and sedated, was transferred to the catheter laboratory for coronary angiography. During coronary angiography, it was observed that while there was complete patency in the middle section of the left anterior descending coronary artery in the left anterior oblique cranial angle during diastole, almost total stenosis occurred during systole (Figure 2A, B and Video 1). Subsequently, surgical revascularization was planned for the patient, who was diagnosed with malignant myocardial bridging.

Coronary bridging has been identified as a potential risk factor for sudden cardiac death. Research has shown that coronary bridging, a condition in which the coronary artery tunnels through the myocardium rather than resting on its surface, may be associated with an increased risk of sudden cardiac death. Systolic bridging, in particular, can compromise coronary flow, leading to significant anginal symptoms, myocardial infarction, and even sudden cardiac death.[1,2] Additionally, in the context of hypertension, coronary bridging may further elevate the risk of sudden cardiac death. These serious cardiac events could potentially include conditions such as acute coronary syndrome, arrhythmias, and even sudden cardiac death.[3-5] It is essential for healthcare professionals to be aware of this association and consider coronary bridging as a possible cause in patients presenting with sudden cardiac death or symptoms suggestive of myocardial ischemia, especially in patients with hypertrophic cardiomyopathy, where the prevalence of myocardial bridging is significantly higher.[4,6]

The treatment of coronary bridging should be tailored to the individual patient, taking into account their specific risk factors and symptoms. One treatment option for symptomatic myocardial bridges is surgical intervention, such as coronary artery bypass grafting or stenting, to alleviate the obstruction and improve blood flow to the myocardium. Another treatment option involves medical management, which may include medications to control symptoms and reduce the risk of complications.[7]

Acknowledgement

None.

Conflicts of Interest

None.

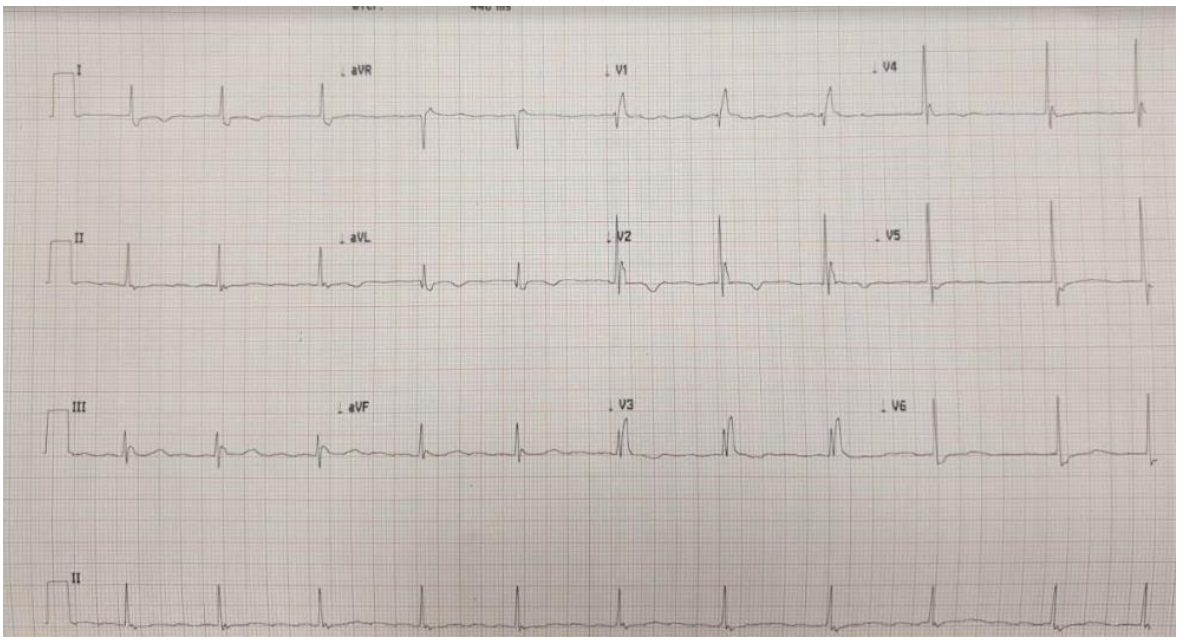

Figure 1A: Right bundle branch block and atrial fibrillation rhythm on electrocardiography (A).

Figure 1B: Increased interventricular septum thickness in parasternal long axis transthoracic echocardiographic image (B).

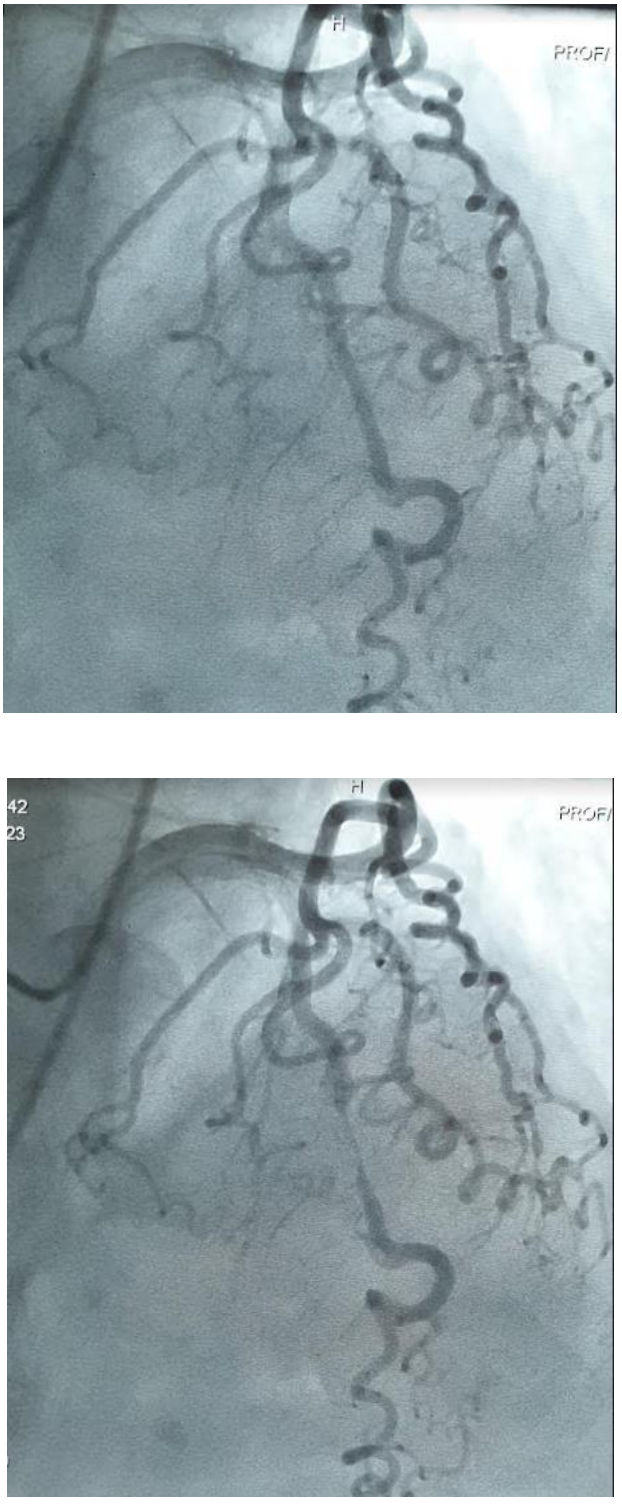

Figure 2 A,B: Coronary angiography shows complete patency in diastole (A) and near-total stenosis in systole (B) in the middle part of the left anterior descending coronary artery (LAD) at the left anterior oblique (LAO) cranial angle.

Funding

None.

References

1. Garg S, Brodison A, Chauhan A. Occlusive systolic bridging of circumflex artery. *Catheter Cardiovasc Interv*. 2000;51(4):477-478.
2. Radu N, Petru B, Radu B. Morphological Features on Myocardial Bridges at the Anterior Interventricular Artery. *ARS Medica Tomitana*. 2018;24(3): 164-174.
3. Aksoy F, Baş HA, Altınbaş A. Nonsymptomatic myocardial bridge causing systolic total narrowing of circumflex artery. *J Saudi Heart Assoc*. 2018;30(2):153-156.
4. Saling LJ, Raptis DA, Parekh K, et al. Abnormalities of the Coronary Arteries in Children: Looking beyond the Origins. *Radiographics*. 2017;37(6):1665-1678.
5. Akdemir R, Gunduz H, Emiroglu Y, et al. Myocardial bridging as a cause of acute myocardial infarction: a case report. *BMC Cardiovasc Disord*. 2002;2:15.
6. Loukas M, Von KK, Gilkes M, et al. Myocardial bridges: A review. *Clin Anat*. 2011;24:675-683.
7. Sternheim D, Power D, Samtani R, et al. Myocardial Bridging: Diagnosis, Functional Assessment, and Management. *J Am Coll Cardiol.* 2021;78(22):2196–2212.