

Case Report

Endocarditis on Top of a Subaortic Membrane Causing Cerebral and Coronary Embolization: Case report

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Abstract

Background: Although the fact that discrete subaortic membrane is considered the second most common cause of subaortic stenosis among children accounting for 14% of cases, yet few reports are available about it in adults. Endocarditis occurring on top of subaortic membrane itself has been described in the literature only twice; once at operation and once at postmortem.

Case presentation: We report a very rare case of endocarditis on top of discrete subaortic membrane in an adult male which was complicated by embolisation to the left anterior descending artery leading to acute anterior myocardial infarction as well as left middle cerebral artery resulting in right sided hemiparesis.

Conclusion: Discrete subaortic membrane may remain silent and present lately in adult life with complications like endocarditis which might announce itself by embolic manifestations.

Keywords: Discrete subaortic membrane; endocarditis; myocardial infarction; cerebrovascular stroke; embolization

Abbreviations: DSM: Discrete subaortic membrane; LVOT: Left ventricular outflow tract; LAD: Left anterior descending artery; MCA: Middle cerebral artery; MI: Myocardial infarction; EF: Ejection fraction; ECG: Electrocardiography; CT: Computed tomography

Background

Discrete subaortic membrane (DSM) represents a subvalvular fibromuscular ring beneath the aortic valve [1]. It is considered the second most common cause of subaortic stenosis among children accounting for 14% of cases; however, few reports are available about it in adults [2]. DSM produces variable degrees of left ventricular outflow tract (LVOT) obstruction

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tion in 15-20% of cases and may be complicated by left ventricular hypertrophy, aortic insufficiency and rarely infective endocarditis [3]. Endocarditis complicating subaortic membrane has been described in the literature only twice; once at operation and once at postmortem [4]. Here we report a very rare case of endocarditis on top of DSM in an adult male which was complicated by embolisation to the left middle cerebral artery (MCA) resulting in right sided hemiparesis and left anterior descending (LAD) artery leading to acute anterior myocardial infarction (MI).

Case presentation

A male patient 36 years old from Yemen was referred to us with fever and right sided weakness one month ago followed by the development of severe anginal pain since hours. Upon examination, the patient had a skin temperature of 38.5°C, blood pressure of 100/60 and regular pulse of 110/min. Trans-thoracic echocardiography demonstrated a mildly dilated left ventricle (an end diastolic diameter of 5.7cm and end systolic diameter of 4cm) with increased septal wall thickness of 1.4 cm and severely reduced left ventricular ejection fraction (EF) of 34%. Regional wall motion abnormality in the form of akinetic apex was demonstrated. A discrete subaortic membrane was found 8mm beneath the aortic valve and extending over 2/3 of the circumference of the LVOT causing a peak systolic gradient of 22 mmHg (may be underestimated due to the low EF). Multiple freely mobile masses were noted attached to the membrane with the largest 6 × 3 mm. Figure 1.

Electrocardiography (ECG) showed Q-waves in chest leads V1-V4 associated with elevated cardiac enzymes and positive troponin T enzyme denoting an anterior MI. A computed tomography (CT) brain showed a left peri-ventricular hypodense oblong-shaped area with no surrounding edema or mass effect suggestive of a subacute deep parietal infarction of MCA distribution. Figure 2 A coronary angiography detected a distal occlusion of the LAD with no anti-or retro-grade flow in the occluded segment. Figure 3

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Fig. 1: An echocardiography picture showing the subaortic membrane protruding into the left ventricular outflow tract with tiny masses on it.

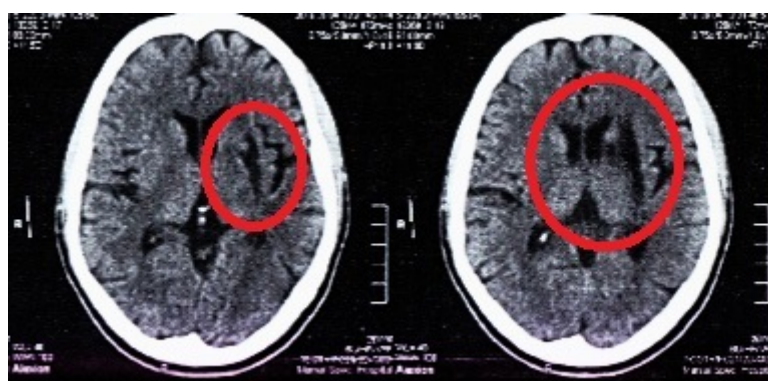


Fig. 2: CT brain showing a left peri-ventricular hypodense oblong shaped area due to a subacute deep parietal infarction.

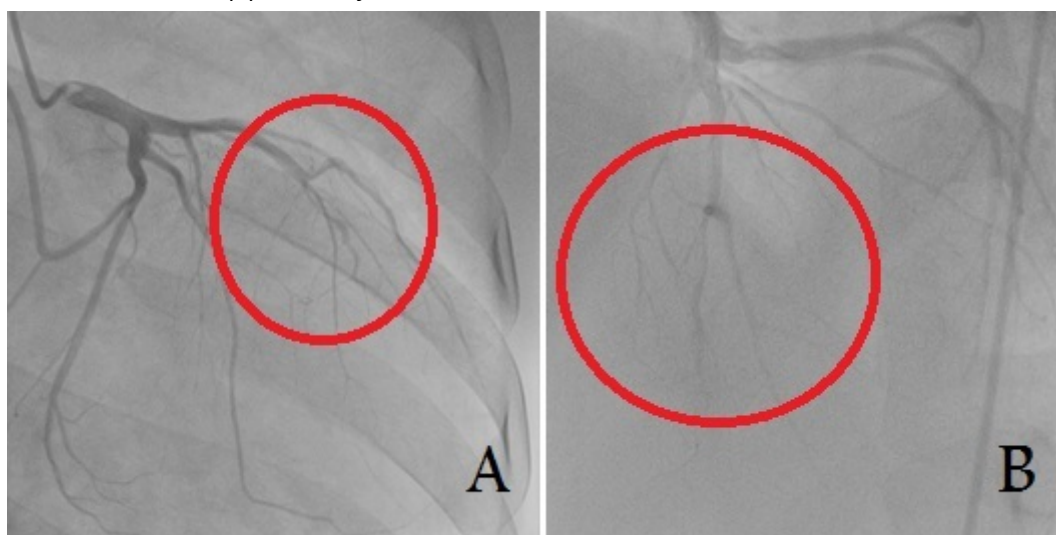


Fig. 3: Coronary angiography showing distal occlusion of the LAD with otherwise normal coronaries in right anterior view with caudal inclination (A) and left anterior oblique view with cranial inclination (B)

Other remarkable laboratory studies showed a hemoglobin level of 10.4 g/dl, total leucocytic count of 15.4×10^3 mm³, CRP of 108 mg/l and ESR of 80mm/hour. Three successive blood cultures were obtained from different sites at the fever spikes. A diagnosis of endocarditis on top of a subaortic membrane with vegetations causing both cerebral and coronary embolisation was postulated. The patient was stabilized in the ICU with inotropic support and intra-aortic balloon pulsation application. Antibiotics were started empirically and then

modified according to results of blood culture and sensitivity which showed an infection by *Staphylococcus aureus*. One week later cardiac enzymes returned to almost normal levels, so the patient was taken to the operating theater where, through median sternotomy and cardiopulmonary bypass, the subaortic membrane together with the vegetations were excised. A septal myectomy was added. The left anterior descending artery was found totally occluded and was bypassed with the left internal mammary artery. The postoperative

course went unremarkable and the patient was discharged in a good condition to another facility to receive the antibiotics for 6 weeks. The postoperative echocardiography showed a well-resected subaortic membrane with peak systolic gradient across the LVOT of 4 mmHg.

Discussion

Discrete subaortic membrane is suggested to result from abnormal flow patterns in the left ventricle leading to the deposition of fibro-elastic material below the aortic valve. Patients with subaortic membrane may present with manifestations of aortic stenosis or may remain asymptomatic and present lately with complications like aortic insufficiency due to high-velocity jet of blood or endocarditis. Endocarditis develops either on the aortic leaflets due to aortic insufficiency or on the membrane itself due to the high LVOT gradient [5]. Indications for surgery in DSM are controversial, however the presence of symptoms, occurrence of complications like aortic regurgitation and endocarditis or detection of peak systolic gradient across the LVOT > 50 mm Hg regardless of the gradient across the DSM or symptoms are quiet justifying reasons. Surgery involves the resection of the fibro-muscular subaortic membrane in addition to a septal myectomy to avoid recurrence [6].

Declarations

- **Consent for publication:** A written informed consent was obtained from the patient to publish his case and accompanying images.
- **Competing interests:** The authors declare that they have no competing interests.
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