CASE REPORT

An incidentally detected giant membranous interventricular septal aneurysm secondary to previous surgery for subaortic valvular stenosis

Ahmet Karagöz,¹ Abdullah Çelik,² Aslı Vural,¹ Bengi Başer¹

¹Department of Cardiology, Giresun University, Giresun, Turkey

²Department of Cardiovascular Surgery, Giresun University, Giresun, Turkey

Correspondence to

Dr Ahmet Karagöz,
drahmetkgz@hotmail.com

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SUMMARY

Ventricular septal aneurysms are rare clinical entities and their certain prevalence and clinical significance are not well known. Most of them are thought to develop during or after the closure process of the accompanying ventricular septal defects. Although a majority of the patients are typically asymptomatic, the potential risks should also be kept in mind. We present a case of a membranous interventricular septal aneurysm that developed after surgery for subaortic valvular stenosis. The points that make our case worth reporting are development of the aneurysm after aortic surgery and lack of a concomitant ventricular septal defect. On the basis of the existence of an aortic valve surgery history and reports that do not mention any ventricular septal defect and ventricular septal aneurysm when she was operated, we suggest that the aneurysmatic formation in the membranous portion of the interventricular septum developed due to valve surgery in the postoperative wound healing period.

BACKGROUND

A ventricular septal aneurysm (VSA) is an uncommon cardiac disorder, and its accurate prevalence is not well known. It can occur as a result of the spontaneous closure of a pre-existing ventricular septal defect (VSD) and the other aetiological factors consist of idiopathic formation, infection and trauma.^{1–5} The majority of cases are thought to originate from a congenital aetiology.^{3–5} It should be noted that for a VSA, it is uncommon to exist in the absence of a known prior VSD. Clinical manifestations of this entity are variable. Some patients are asymptomatic with a normal physical examination; on the other hand, others can present with haemodynamic compromise.⁵ Conduction abnormalities, aneurysm rupture, bacterial endocarditis, right ventricular outflow tract obstruction, significant intracardiac shunting and thromboembolism are possible complications.

CASE PRESENTATION

A 35-year-old female patient was consulted pre-operatively to our outpatient clinic from department of general surgery because she had undergone aortic valve surgery previously. On a detailed anamnesis, it was found that a correction procedure had been performed for the obstruction below the aortic valve when she was 17 years old. Her surgical operation reports demonstrated that she had undergone surgery for subaortic valvular

stenosis and that she had no control visits up to now. She had been complaining about palpitations for a long time.

INVESTIGATIONS

Normal clinical findings were detected in her physical examination except for a mildly increased heart rate. A 12-lead ECG revealed sinus rhythm with a heart rate of 106 bpm. Echocardiographic assessment demonstrated normal left ventricular function and valvular structures. On the other hand, the membranous part of the interventricular septum was aneurysmatic towards the right ventricle (figure 1). There was an outward bulge of the basal interventricular septum during systole and diastole with slightly reduced wall thickness (figure 2). Echocardiography visualised an aneurysm of the membranous septum free of thrombosis without VSD (figure 3). Colour Doppler examination did not show any shunt flow between the ventricles. No accompanying VSD was evident. Peak systolic pulmonary artery pressure estimated by the modified Bernoulli equation was 18 mm Hg. Laboratory examination revealed normal thyroid hormone levels and the patient would already undergo surgery for toxic multi nodular goitre. Tachycardia of the patient was considered to be due to the elevated thyroid hormone levels.

DIFFERENTIAL DIAGNOSIS

Pre-existing VSA.

Figure 1 Appearance of an interventricular septal aneurysm in an apical four chamber view.

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Figure 2 Aneurysmatic segment bulges into the right ventricle during systole.

TREATMENT

Based on the haemodynamic stability of the patient and absence of any other symptoms, β -blocker therapy was started and she underwent surgery for a toxic multinodular goitre.

OUTCOME AND FOLLOW-UP

The patient was asymptomatic on medical follow-up.

DISCUSSION

Aneurysms of the membranous ventricular septum are extremely rare with very few case reports in the literature. Although a majority of the patients are typically asymptomatic, the potential risks should also be kept in mind. On the grounds that rupture, bacterial endocarditis, right ventricular outflow tract obstruction, intracardiac shunting, thromboembolism and other cardiac complications can occur as a result of a membranous VSA, this clinical entity requires careful diagnosis and analysis. Physicians should caution and educate patients about the potential complications that may arise and their indicative symptoms. Surgical treatment is rarely required for this disorder when it is present alone. Indications for surgical intervention include concurrent heart diseases, haemodynamic abnormalities and aneurysm-related complications.

We also present a case of a membranous inter-VSA that developed after surgery for subaortic valvular stenosis. The points

that make our case worth reporting are development of the aneurysm after aortic surgery and lack of a concomitant VSD. Any statement about an inter-VSA is not mentioned in the previous surgery reports and echocardiography reports of that period. Moreover, she had no control visits since then. All of these make us think that the aneurysm developed after surgery maybe in a long time period in response to changes in the tensile strength of the tissues during and after wound healing. As mentioned, inter-VSAs may also develop after trauma and previously, Branco *et al*⁶ also reported the formation of an interv-VSA cavity after mitral valve surgery. On the other hand, this case seems to be the first report after aortic correction surgery. The contribution of the increased heart rate in the development of the aneurysm is also speculative. Nevertheless, regardless of the aetiology, our approach in this case was conservative due to the absence of concurrent heart diseases, haemodynamic abnormalities and aneurysm-related complications. The stable clinical condition and absence of symptoms and complications led to the decision of avoiding surgery. Besides this, some physicians speculate that membranous interventricular septal aneurysms should be resected completely in order to prevent further enlargement and consequent complications even if there are no cardiac symptoms.² The majority of ventricular aneurysms are believed to be acquired, and in contrast aneurysms of the membranous portion of the ventricular septum are thought to be congenital in origin. It is believed that most of the membranous inter-VSAs occur following partial or total closure of a pre-existing VSD. Additionally, congenital aneurysms of the membranous portion of the ventricular septum have been reported in isolation⁷ or associated with other cardiac anomalies such as aortic stenosis⁸ atrial septal defects or VSDs, pulmonary stenosis, coarctation of the aorta, anomalous pulmonary venous return and persistent left superior vena cava, as well as in association with chromosomal abnormalities and genetic syndromes.⁹ Therefore, a very detailed echocardiographic evaluation via an experienced physician is also mandatory in order to not overlook a possible concomitant anomaly. On the basis of the existence of an aortic valve surgery history and reports that do not mention any VSD and VSA when she was operated, we suggest that aneurysmatic formation in the membranous portion of the interventricular septum developed due to valve surgery in the postoperative wound healing period.

Learning points

- ▶ A ventricular septal aneurysm is a rare clinical entity and its accurate prevalence is not well known.
- ▶ It can occur as a result of spontaneous closure of a pre-existing ventricular septal defect and the other aetiological factors consist of idiopathic formation, infection and trauma.
- ▶ Previous acute myocardial infarction, septal myectomy, chest trauma, endocarditis or endomyocardial biopsy have been reported to be the cause of interventricular septal aneurysms, and aortic surgery also seems to be another aetiological factor for the development of aneurysm of the interventricular septum.

Figure 3 Aneurysmatic membranous portion of the interventricular septum in a parasternal long axis view.

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Competing interests None.

Patient consent Obtained.

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