Asymptomatic right atrial aneurysm: fortuitous finding and resection

C.J.A.M. Zeebregts*, A.G. Hensens, L.K. Lacquet

Department of Thoracic and Cardiac Surgery, University Hospital Nijmegen, P.O. Box 9101, 6500 HB Nijmegen, The Netherlands

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Abstract

A rare right atrial aneurysm is described in a 36-year-old man. After median sternotomy for coronary bypass, a thin-walled aneurysmal dilatation of the right atrium was seen by chance. The patient was in sinus rhythm. The aneurysm was surgically resected. The postoperative course was uneventful. © 1997 Elsevier Science B.V.

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Left atrial aneurysms are rare and constitute a minority of all cardiac aneurysms. Aneurysmal dilatation of the right atrium is even less common. A review of the literature reveals only a few reports of right-sided atrial aneurysms [1–8]. Except for one [1], all of the described patients had supraventricular tachyarrhythmias. We describe a patient with an intrapericardial right atrial aneurysm and normal sinus rhythm.

1. Case report

A 36-year-old man was admitted to our hospital, having NYHA (New York Heart Association) class IV anginal symptoms. He had a 5 year history of progressive angina pectoris. He had twice undergone PTCA for obstruction of the first marginal obtuse branch of the circumflex artery and the right coronary artery respectively, both with only temporary improvement. Comorbid conditions included hypertension, hypercholesterolemia, smoking and a family history of coronary artery disease.

Physical examination showed normal blood pressure (130/90 mmHg) and no jugular venous distension. No regurgitation, stenotic murmurs or pericardial friction rub were found. Pulmonary examination, biochemical screening and chest X-ray revealed no abnormalities. The electrocardiogram was normal with a sinus rhythm at 70 beats/min. Ischemic changes could hardly be detected on stress test. On coronary angiography, stenoses were seen in the intermediate artery (INT), posterior lateral circumflex artery (PLCX) and posterior descending artery (PDA). Catheterization of the heart showed no intracardiac shunt and right atrial pressure was normal.

Coronary artery bypass grafting was performed through a median sternotomy. After opening the pericardium, a spheroidal dilatation of the free wall of the right atrium measuring 7 × 6 cm was noticed. Direct bicaval cannulation and mild hypothermia (30°C) were used for cardiopulmonary bypass. On palpation of the dilatation, the existence of an aneurysm was suspected. Transesophageal echocardiography (TEE) confirmed the diagnosis and, moreover, disclosed no thrombus within the aneurysmal sac nor in the right atrium. The caval veins were not involved and the tricuspid valve was functionally normal. The dilatation was incised through an oblique right atriotomy and a large commu-
ful and he was discharged from hospital 8 days later. Normal right atrial dimensions were seen at postoperative TEE. To exclude the possibility of collagen deficiency (e.g. Ehlers-Danlos syndrome type IV), the patient was seen by a clinical geneticist, who did not find any abnormality.

2. Discussion

Resection of a true right atrial aneurysm was first described by Morrow and Behrendt [4]. Since then, right atrial aneurysm resection has been reported in seven other cases (Table 1). Only one case [1] had a normal sinus rhythm as in our case. Including our patient, the male:female ratio was 5:4. The lesion was always thin and translucent, with swirling blood or (organized) thrombus within it. Right atrial aneurysm can be classified into two types, based upon its appearance. Six patients had a single aneurysm and three had multiple right atrial aneurysm.

The pathogenesis is unclear. High right atrial pressure may be of causal importance in patients with associated interatrial shunt or tricuspid insufficiency, but these defects were not described in the eight reported cases. Therefore, since hemodynamic stress is unlikely, an intrinsic factor may play a role, as tissue weakening due to a protein defect, or as deficiency of collagen type III, e.g. Ehlers-Danlos syndrome type IV.

The relationship between the aneurysm and atrial tachycardia is not yet fully understood. The atrial tissue itself may be responsible for arrhythmias, either by providing extensive surfaces over which circus movements could occur or by containing irritable ectopic foci or atrial re-entry tachycardia. Some authors [3,5,8], who all reported multiple right atrial aneurysms, found the earliest activation site at the anterior wall of the right atrium. The histologic structure of this earliest activation site showed a resemblance to sinus node. Surgical excision of the aneurysm, together with the focus if detected, provoked complete cure in all cases.

![Fig. 1. Communicating orifice of the intrapericardial right atrial aneurysm.](image-url)
Resection of right atrial aneurysm is also indicated in asymptomatic patients, because complications, such as thrombosis with pulmonary embolism, and rupture, may occur. If thrombus is present within the aneurysmal sac, the pulmonary artery may be occluded temporarily to prevent embolization of fragments of thrombus, while resecting the aneurysm [4]. After identification of the communicating orifice and resection of the aneurysm, the atriotomy should be closed by direct suture if possible. If it is necessary to resect a large part of atrial tissue, a pericardial patch may be necessary, preserving normal atrial consistency and size.

In conclusion, fortuitous finding of a right atrial aneurysm should be surgically corrected to prevent rhythm disturbances, potential thrombosis with pulmonary embolism, and atrial rupture. The natural course of right atrial aneurysm, however, remains unclear.

References