Case report

Giant right atrial aneurysm presenting as right heart failure

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KEYWORDS

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Normal sinus rhythm
Right heart failure

ABSTRACT

Idiopathic aneurysmal dilatations of the right atrium are rare anomalies. We report one such case of a young man presenting with fatigue, abdominal distension, pedal oedema, unremarkable cardiac examination except for raised jugular venous pressure, an electrocardiogram showing normal sinus rhythm with right bundle-branch block, and an radiograph of the chest showing cardiomegaly. The echocardiographic examination revealed a giant right atrium with low pressure tricuspid regurgitation. The computed tomography confirmed the findings of two-dimensional echocardiography. He was put on medical treatment and remained symptomatically controlled on follow-up.

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Introduction

Giant right atrial (RA) aneurysm, also known as idiopathic dilatation of the right atrium and congenital enlargement of the right atrium, is a rare abnormality of unknown origin.¹ This exceptional condition can be confused with other conditions that involve enlargement of the right atrium, such as Ebstein's anomaly and tricuspid hypoplasia.

We report a case of symptomatic giant RA aneurysm in sinus rhythm.

Case report

An 18-year-old boy presented with gradual onset abdominal distention and swelling of both legs and easy fatigability which were gradually progressive over a period of 2 years. There was no history of fever. On examination, his blood pressure was 110/80 mmHg, heart rate was 100/min, jugular venous pulse was raised and the respiratory rate was 24/min. Cardiovascular system examination did not reveal any murmur. Respiratory system examination was normal. There was

abdominal distention with hepatomegaly. Arterial oxygen saturation was 98%.

The chest radiograph posteroanterior view showed huge cardiomegaly (Figure 1). Electrocardiogram showed sinus rhythm with right axis deviation, right bundle-branch block, and tall R-wave with inverted T-waves in V1–V4. Two-dimensional echocardiography (ECHO) revealed aneurysmally

Figure 1 Chest radiograph posteroanterior view showed huge cardiomegaly.

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Figure 2 Two-dimensional echocardiography showing aneurysmal dilatation of the right atrium.

Figure 3 Computed tomography scan showed aneurysmally dilated right atrium communicating with right ventricle. LV: left ventricle, RA: right atrial, RV: right ventricle.

dilated RA measuring 14 cm × 10 cm (Figure 2). The tricuspid valve was not displaced. There was moderate low pressure tricuspid regurgitation and no stenosis. The RA wall was a kinetic without any intracavitary thrombus. The interatrial and interventricular septae were intact. The right ventricle (RV) and outflow tract were mildly dilated with preserved systolic function. The pulmonary arteries were normal and Doppler evaluation of the tricuspid leak indicated normal pressures. The left atrium and left ventricle were normal. Computed tomography (CT) scan showed aneurysmally dilated right atrium communicating with RV (Figure 3). Right ventricle and RV outflow tract were dilated with normal pulmonary arteries. Other laboratory investigations were within normal limits. The patient was advised a surgical intervention but did not give his consent. He remained in sinus rhythm and symptomatically controlled on medical management with diuretics, rate lowering drugs and limitation of activity.

Discussion

Aneurysm of right atrium is a quite uncommon condition, which has been reported as cases detected in age groups varying from neonates to late adulthood.² Baily et al. were the

first to report the condition.³ which has later been identified under various headings like aneurysm, diverticulum or idiopathic dilatation.

Approximately, one-half (48%) of the patients with congenital enlargement of the right atrium have no symptoms. When they occur, symptoms include shortness of breath (28% of cases), palpitations (17%), and arrhythmia (12%) and rarely right heart failure (HF) and easy fatigability. Our patient presented with symptoms of right HF. Sinus rhythm is observed in 53% of the patients. The major rhythm abnormality is atrial fibrillation or atrial flutter, seen in 28% of cases.² Our patient had sinus tachycardia on presentation and remained in sinus rhythm with rate control.

Associated congenital heart defects consisting of atrial septal defect, ventricular septal defect and coronary sinus diverticula are not uncommon.⁴ It is obvious that there is a congenital structural defect in atrial wall which makes it prone to dilations even with modestly increased right-sided pressures. Lipomatous degeneration and reduction of muscular elements in the aneurysmal wall have been reported.² The diagnosis of RA malformation can be established with ECHO, angiography, CT, or magnetic resonance imaging (MRI).¹ Transthoracic ECHO is the most commonly used technique. However, additional imaging may be necessary. Computed

tomography can provide good-quality anatomic information, and cardiac systolic function can be assessed, although not as precisely as with MRI because of limited temporal resolution.

Literature reports various ways to manage this condition like observational management, resection using cardiopulmonary bypass and correction of associated defects. Conservative management may not prevent atrial dilatation which could invite complications of thromboembolism. Fatal arrhythmias worsening tricuspid regurgitation and sudden death can occur. Arrhythmias necessitate and have been successfully treated by surgical excision of the aneurysm.^{5–7}

Conclusion

Aneurysmal dilatation of the right atrium due to inherent defect in its wall can occur in the absence of other congenital defects or acquired heart disease. It usually presents with atrial, even ventricular arrhythmias and HF. Treatment ranges from conservative to surgical resection specially in the presence of arrhythmias.

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