Asymptomatic idiopathic right atrial rupture: An unusual presentation

Parminder S. Otaal, Rajesh Vijayvergia

ABSTRACT

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Case Report: A case of spontaneous idiopathic right atrial rupture detected on routine physical examination in a completely asymptomatic active young male. A defect of 18 mm in the right atrial wall just above the level of tricuspid valve was revealed in the transthoracic echocardiogram. Patient denied the option of surgical repair and remains asymptomatic during a two-year follow-up.

Conclusion: Very rarely, patients with spontaneous idiopathic right atrial rupture may remain asymptomatic for a long period and can live a normal life without any active surgical intervention. However, the patient may develop severe right heart failure followed by death if the medical condition is left untreated. In view of the long-term complications, it is advisable to treat this condition with immediate surgical intervention.

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CASE REPORT

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Keywords: Right atrial rupture, Idiopathic, Spontaneous, Cardiology

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INTRODUCTION

Atrial rupture of the heart is a rare condition which carries a very high mortality and requires urgent surgical repair [1, 2]. Almost all cases of right atrial rupture reported in literature had significant symptoms and either underwent urgent surgery or had limited survival [2–4]. Survival beyond short-term has not been reported in literature [1]. Here we report a patient with spontaneous right atrial rupture diagnosed two years back and followed-up since then. The case here is discussed in view of the existing literature.

CASE REPORT

A 25-year-old male was referred to us for cardiac evaluation in view of cardiomegaly found on chest X-ray during pre-employment medical examination. Patient was asymptomatic, active young man with no significant past medical history. Patient denied any history of malaise, fever, weight loss or fatigue. Patient also denied any history of chest discomfort, trauma, any hospitalization or intervention in the past. His clinical examination was normal with no evidence of systemic venous congestion. electrocardiography showed no abnormality.

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X-ray of chest revealed cardiomegaly with right atrial enlargement. Transthoracic echocardiogram revealed an 18 mm defect in the right atrial wall just above the level of tricuspid valve. This was supported by transesophageal echocardiogram (Figure 1). Color Doppler using transesophageal echocardiography showed flow across the defect into the pericardial cavity (Figure 2). Further, contrast echocardiogram using transesophageal echocardiogram revealed opacification of right atrium and right ventricle simultaneously with opacification of pericardial sac while the left side chambers showed no evidence of bubble contrast (Figure 3). Echocardiography also revealed compression of the right ventricle and its outflow tract suggestive of right sided tamponade. There was minimal effusion on either side of left ventricle or left atrium.

The patient was advised further evaluation and the option of possible surgical repair but patient denied the same. Patient is on follow-up from last two years and is completely asymptomatic.

Figure 1: Four chamber view using Transesophageal echocardiography showing defect in the right atrial free wall with pericardial effusion.

Figure 2: Four chamber views with color flow Doppler using transesophageal echocardiography showing flow across the defect in the right free wall.

Figure 3: Contrast echocardiography in apical four chamber view using 2D transthoracic echocardiography showing saline bubble contrast opacifying right atria, right ventricle and pericardial space.

DISCUSSION

Right atrial rupture cases can be classified into different types based on the causes cited in various case reports.

1. Iatrogenic

Live three-dimensional echocardiography helped diagnose a 54 year old woman of silent right atrial rupture following cardiac catheterization for atrial septal defect [4]. The patient had undergone cardiac catheterization and coronary angiography two months earlier and was complaining of tolerable exertional dyspnea.

2. Post-traumatic

Blunt traumatic cardiac rupture is associated with a very high rate of mortality. Rapid pre-hospital transportation and prompt surgical intervention contribute to survival in these patients [2, 5, 6]. Brathwaite et al. observed an overall mortality of 81.3% in their review of 32 patients comprising right atrial rupture (40.6%), left atrial rupture (25%), right ventricular rupture (31.3%), left ventricular rupture (12.5%) and rupture of two cardiac chambers (9.4%). The only survivors were those patients (6 of 12 patients) who presented with vital signs [2].

3. Malignancy

Primary heart tumors are extremely rare, with an incidence of 0.0017% as reported in the autopsy studies by American Medical Association [7]. However, cardiac metastases are more frequent than the primary heart tumors. Angiosarcomas have a mesenchymal origin and account for 25–30% of the malignant cardiac tumors [1]. Angiosarcoma of the heart almost exclusively involves the right atrium and appears between the 3rd and 5th

decades of life. Spontaneous rupture of an angiosarcoma is extremely rare with only few case reports till now [1, 8].

4. Infarction

Wessler et al. studied 20 hearts on autopsy and found that none of the ruptures was localized to the right side of heart and all cases had myocardial infarction in the territory of rupture [9]. Rupture of the right ventricle in acute myocardial infarction has been infrequently reported in literature. Atrial rupture in acute myocardial infarction is rare but has been reported [10].

5. Idiopathic

The present case is a unique case of right atrial rupture since this young man harbors cardiomegaly accompanied by right atrial rupture yet he is asymptomatic and clinically sound.

Most common symptoms of atrial rupture are recurrent or persistent chest pain, asthenia, dyspnea, syncope and distension of jugular vein. The diagnosis of atrial rupture is generally made based on physical examination and changes in the vital signs that can be confirmed through hematological tests followed by radiological investigations such as chest X-ray, transthoracic echocardiography (TEE), color Doppler, magnetic resonance imaging (MRI) scan etc. The differential diagnosis of right atrial rupture should include epicardial hematoma. Surgical correction of the rupture is the treatment of choice and patients can survive if the rupture is recognized and corrected in acute setting.

CONCLUSION

Very rarely, patients with spontaneous idiopathic right atrial rupture may remain asymptomatic and can live a normal life without any active surgical intervention. However, the patient may develop severe right heart failure followed by death if the medical condition is left untreated. In view of the long-term complications, it is advisable to treat this condition with immediate surgical intervention.

Author Contributions

Parminder S. Otaal – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Rajesh Vijayvergia – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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