



Interatrial septal aneurysm in pregnancy: A case report

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Abstract

Inter Atrial Septal Aneurysm is an uncommon condition with presentation varying from asymptomatic to supraventricular arrhythmias, cryptogenic stroke in the young ^[1]. It can present as an isolated anomaly or be associated with a number of other anomalies including Patent Foramen Ovale and Mitral Valve Prolapse ^[2].

We are reporting a case of 25 years old G2P1L1, at 29 weeks of gestation who presented with fatigue, breathlessness and palpitations. On examination there was tachycardia and echocardiography showed aneurysmal interatrial septum. Multidisciplinary team management was initiated during pregnancy and managed till delivery which occurred uneventfully.

Conclusion: Regular follow-up with echocardiography along with multidisciplinary approach is the cornerstone to prevent complications and maternal morbidity in such cases.

Keywords: interatrial septal aneurysm, echocardiography, supraventricular tachycardia, arrhythmia, pregnancy

Introduction

An atrial septal aneurysm (ASA) is an uncommon well recognized condition characterized by localized saccular deformity of the atrial septum that bulges into the right or left ventricle or both. It can be totally asymptomatic or present with complaints of palpitations due to arrhythmias, angina or can also lead to thromboembolic events including cryptogenic stroke ^[3]. Since common complaints during pregnancy of dyspnea, palpitation and limitation of effort capacity are due to the physiological changes in pregnancy, cardiac diseases can be missed or detected late in pregnancy thereby increasing the morbidity and mortality.

Case report

A 25 year old G2P1L1 with 29 weeks of gestation presented to our OPD with complaints of fatigue, breathlessness and palpitations. On examination her pulse rate was 120 bpm, regular and other vitals were stable. On abdominal examination, revealed a gravid uterus corresponding to her dates and fetal heart was audible on auscultation. Cardiologist opinion was taken. Her electrocardiograph was normal and echocardiography showed aneurysmal interatrial septum, bulging to the right 15 mm with no obvious shunt across and without visible thrombosis. Her atrial dimension, ventricular dimensions and valves were normal and no segmental wall motion abnormality at rest was detected. Cardiologist advised regular follow up with no active intervention at present.

There was no history of similar complaints in the past or in first pregnancy and during labor. There was no family history of similar disorder or congenital heart disease.

The case was followed up on weekly as a high-risk case. The patient was admitted at 39 weeks of gestation in view of oligohydramnios. She went into spontaneous labour and delivered vaginally uneventfully. Her postnatal follow-up

was uneventful and she was discharged on post natal day three. She was then followed up in cardiology unit.

Discussion

In 1934, Lang and Posselt were the first to report case of ASA ^[4]. The prevalence of Atrial Septal Aneurysm defect was 2 to 10% in the general population ^[5, 6]. Atrial septal aneurysm is a localized saccular deformity due to redundant and mobile interatrial tissue in the region of the fossa ovalis that displaces > 10 to 15mm into either atrium. This ASA formation may be secondary to interatrial pressure differences or maybe due to a congenital primary malformation involving the region of fossa ovalis or the entire septum. The presence of this condition in many patients with normal atrial pressure suggests that it maybe a congenital primary malformation ^[7]. It can be isolated or associated with other congenital heart disease like Patent Foramen Ovale, Mitral Valve Prolapse, Ventricular Septal Defect. It can also be associated with acquired heart disease like valvular heart disease, cardiomyopathy, pulmonary hypertension.

It can be classified based on the oscillation into the LA or RA and motion during respiration.

Type 1R – bulging in RA only

Type 2L – bulging in LA only

Type 3RL – maximal excursion into RA and less into LA

Type 4 LR – maximal excursion into LA and less into RA

Type 5 – bidirectional equidistant movement ^[6]

Diagnosis is done using transthoracic and transesophageal echocardiography. Other imaging modalities included Computerized Topography (CT) especially for the large aneurysms.

In the study conducted by Marazanef *et al.* fossa ovalis was involved in all the patients but in 55% cases the aneurysm extended to the distal two thirds of the inter atrial septum, thus creating a thin similar outpouching membrane ^[8].

Atrial septal aneurysmal defects predispose to arrhythmias, systemic embolism and heart failure. The change in the

atrial geometry due to the atrial septal aneurysm may lead to changes in the electrophysiological properties of the atrial myocardium, pre disposing to arrhythmias. This could be by re-entry mechanism dependent on the different electrophysiological properties between the Atrial Septal Aneurysm and the remaining atrial septum ^[9]. Arrhythmias include supraventricular tachycardia in 40%, atrial fibrillation (18%), atrial flutter (4%), atrioventricular nodal re-entrant tachycardia (8%) and miscellaneous (18%) in adult patients with atrial septal aneurysmal defect ^[10].

Also pregnancy is characterized by a number of physiological changes, especially in the cardiovascular system – namely an increase in the maternal intra and extravascular fluid volumes, atrial and ventricular size, adrenergic responsiveness and elevated levels of estrogen and progesterone ^[11]. These changes alter the electrophysiological properties of the heart, predisposing to arrhythmias ^[12].

Embolism can occur due to left atrial thrombus formation within the aneurysm or can occur as a paradoxical aneurysm. Another hypothesis is that there can be microscopic leakages from the aneurysm itself (cribriform aneurysm) leading to the thrombogenicity of this condition ^[13]. Rarely this condition can mimic atrial tumor or atrial cyst. Surgical treatment maybe necessary to prevent these complications. However, conservative management can be implemented if there were no other mechanical defects like atrial septal defect or proved thromboembolic events especially during pregnancy ^[14].

There are no clear guidelines about the management of Atrial Septal Aneurysm in pregnancy. Drugs like beta blockers, aspirin and anti coagulants can be given for ASA with mild symptoms. Though the morbidity associated with conservative management is high, performing cardiac surgeries has its own challenges. Therefore, proper assessment and evaluation of these patients is essential.

Recently there is an increase in the incidence of atrial septal aneurysm defect in young adults born prematurely with an extremely low birth weight (< 1000 g) ^[15].

Hence there might be further increase in incidence of these cases in the future as the incidence of extremely low birth weight is also on the rise.

Conclusion

Timely identification of the condition, by picking up the symptoms and regular follow-up with echocardiography along with multidisciplinary approach is the cornerstone to prevent complications and prevent maternal morbidity in such cases.

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