Atrial Septal Defect Coexistent with Sjögren's Syndrome

Farook Ahmad, Muhammad Athar Sadiq, Kok Han Chee, Ahmad Syadi Mahmood Zuhdi and Wan Azman Wan Ahmad

ABSTRACT

Pulmonary hypertension is frequently associated with atrial septal defect and various connective tissue disorders. This case describes a 74-year-old woman who presented with symptoms of heart failure and concomitant involvement of salivary glands and keratoconjunctivitis. An echocardiogram demonstrated ostium secundum atrial septal defect with left to right shunt and severe pulmonary hypertension. Laboratory investigations confirmed the diagnosis of Sjögren's syndrome (SS) with positive anti-nuclear factor and centromere SS-A/Ro pattern. Anti-Ro (SS-A) was found positive. Atrial septal defect was closed through transcatheter route with significant improvement in clinical outcome. This case report suggests a possible association of atrial septal defect with primary Sjögren's syndrome in an adult patient.

Key Words: Pulmonary hypertension. Ostium secundum atrial septal defect. Sjögren's syndrome.

INTRODUCTION

The ostium secundum atrial septal defect is the most common type of atrial septal defect, accounting for 75% of all ASD cases, representing approximately 7% of all congenital cardiac defects and 30 - 40% of all congenital heart disease in patients older than 40 years.1 Sjögren's syndrome (SS), meanwhile, is a chronic systemic autoimmune disease characterized by lymphocyte infiltrates to exocrine glands. There is strong female predominance with 9 out of 10 patients being female.2 Echocardiographic abnormalities of valvular regurgitations, pericardial effusion, pulmonary hypertension and increased left ventricular mass index have been reported to be significantly higher in primary SS patients.3 Atrial septal defect has been reported with Sjögren's syndrome as a part of polyendocrine syndrome type-II.4

We herein describe the occurrence of atrial septal defect (ASD) with SS without polyendocrine syndrome. The ASD was successfully closed through transcatheter route using an occluder device.

CASE REPORT

A 74-year-old lady with past medical history of childhood asthma and completely treated endometrial cancer was admitted complaining of worsening dyspnea for 2 days prior to admission. She had cough with whitish sputum, orthopnea, paroxysmal nocturnal dyspnea and bilateral lower limb swelling for the past 2 months. Upon admission, she appeared quite ill and was unable to converse in full sentence. On clinical examination, her blood pressure was measured at 158/96 mmHg with pulse rate at 108/minute and O2 saturation of 95% at room air. Her jugular vein was distended and remarkable bilateral peripheral pitting, up to knees, noted. Auscultation revealed ejection systolic murmur of grade-III/VI in the left parasternal area with narrow splitting of second heart sound. There were bibasal crackles and generalized ronchi in both lung fields. There was no focal neurological deficit.

Arterial blood gas concluded a pH of 7.311, pCO2 of 96 mmHg, pO2 of 78 mmHg and HCO3- of 28.3 mmol/L. Urine analysis and blood cell counts were otherwise normal on investigation. Rheumatoid factor was elevated at 377 IU/mL with anti nuclear factor positive by 1:640 by the titre with a speckle, centromer SS-A/Ro pattern present. Anti-Ro (SS-A) was found positive. C-reactive protein, complement 3 and 4 levels, protein C and protein S and antithrombin-III activities were within normal limits. A detailed history revealed that patient started to have symptoms of SS 3 years before current hospitalization but did not seek any medical advice. Although her rheumatoid factor was positive, clinically she did not have any sign and symptoms of rheumatoid arthritis (RA) and was not on any medications, suggesting its elevation as a part of SS.

Chest X-ray demonstrated cardiomegaly and dilated pulmonary arteries bilaterally with pruning of the peripheral branches. The right costophrenic angle was found to be blunted in keeping with mild effusion and the left costophrenic angle was obliterated. The features described were diagnostic of pulmonary arterial hypertension. A 12-lead ECG showed P pulmonale and right ventricular hypertrophy. A secundum type atrial septal defect was demonstrated by transthoracic echocardiogram with enlargement of right sided chambers and pulmonary artery systolic pressure of 89 mmHg. A
pre-transcatheter ASD closure with transesophageal echocardiogram (TEE) at bicaval view measured ASD of 2.2 cm with the shunting of the blood from left-to-right. We treated her with diuretics and 2 weeks later she underwent transcatheter closure with an ASD occluder device (Figure 1). A significant reduction in pulmonary artery systolic pressure (PASP), by 13 mmHg, was observed in the immediate post closure period. No immediate or 30 day's procedure related complication was observed. At one month's echocardiographic follow-up, PASP was measured to be 40 mmHg with no shunting of flow through the ASD closure device. She had marked improvement in effort tolerance and dyspnoea with NYHA class-I. However, there was an increase in PASP to 50 mmHg at 6 months follow-up echocardiogram which also revealed development of mild pericardial effusion.

**DISCUSSION**

In this report, a rare case of primary SS with atrial septal defect is presented. SS is a systemic chronic inflammatory disorder characterized by lymphocytic infiltrates in exocrine organs. Most individuals with SS present with sicca symptoms, such as xerophthalmia (dry eyes), xerostomia (dry mouth), and parotid gland enlargement. In addition, numerous extraglandular features may develop, such as arthralgia, arthritis, Raynaud phenomenon, myalgia, pulmonary disease and gastrointestinal disease. ASDs, meanwhile, account for 30 - 40% of congenital heart defects that are diagnosed in adulthood. In addition, ASD has been reported with several genetic syndromes, most often in association with trisomy 21 (Down syndrome).

In this patient, ostium secundum type ASD with left to right shunt and pulmonary hypertension was diagnosed as all the clinical and investigation findings were conclusive. Although there are frequent reports of pulmonary hypertension associated with connective tissue disorders, it has rarely been reported with SS. Inoue et al. has reported the occurrence of pulmonary hypertension secondary to SS and rheumatoid arthritis with resultant right to left shunting through the patent foramen ovale.

The pathogenesis of pulmonary hypertension seen in SS is yet to be fully established. Nakagawa et al. and Sato et al. performed histopathological studies in their patients of SS with pulmonary hypertension and suggested that an endothelial injury associated with deposition of immune complexes; reversibility of pulmonary hypertension with corticosteroids may suggest that an immunological disorder is related to the mechanism of pulmonary hypertension in SS.

In this patient, SS appeared to have a contributing factor in the development of pulmonary hypertension. A significant decrease in PASP was observed in the immediate and one month post-ASD closure period. However, at 6 month's follow-up, an increase in PASP was observed despite successful closure of ASD. Patient also developed mild pericardial effusion which is the most reported cardiac finding in SS.

The association of ASD with Sjögren's syndrome has been reported only once in an adult patient with autoimmune polyendocrine syndrome. However, exact explanation of the association of ASD with autoimmune polyendocrine syndrome was not found. Recently, Buyon et al. proposed the possible mechanism of association of ASD in primary SS in infants. According to them, intracellular SSA/Ro antigens are translocated to the cell surface secondary to physiologic apoptosis of cardiocytes. This enable circulating antibodies, most commonly IgG, to bind to the antigen. Opsonized apoptotic cardiocytes are then phagocytosed by macrophages causing release of inflammatory cytokines favouring the differentiation of fibroblasts into myofibroblasts that promote irreversible scarring. This is evident from the severe fibrosis found at the atrial wall. Due to prolonged physiologic stress and myogenic muscular action of the heart, septal defect formation is inevitable. Cardiac apoptosis in adult heart has been previously documented. However, this observation is seen only in patients who have suffered acute myocardial infarct, reperfusion injury and ischemic dilated cardiomyopathy. In this patient, SS was primary and patient started to have symptoms of SS 3 years before she developed the symptoms of heart failure. While the
mechanism of development of ASD, proposed by Buyon et al. in infants with primary SS may have merits but its relevancy in adult patients of ASD with primary SS is unknown. Unfortunately, there have been no previous reports citing the association of ASD with primary SS without polyendocrine syndrome. Therefore, in this interesting and unusual case, we suggest a possible association of ASD with primary SS. However, the published data on concrete association of ASD with primary SS in adults is lacking.

REFERENCES


