

## **ATRIAL SEPTAL ANEURYSM IN AN 80-YEAR-OLD WOMAN: A CASE REPORT AND REVIEW OF LITERATURE**

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### **ABSTRACT**

Atrial septal aneurysm usually complicates a patent foramen ovale and atrial septal defect. An 80-year-old female presented with two weeks symptoms of chest infection. Examination revealed consolidation in the right lower zone posteriorly in the chest, a third heart sound (S3) and hepatomegaly. Sputum microscopy and culture were unremarkable and the chest radiograph revealed a mild cardiomegaly (CTR = 0.53) and consolidation in the right lower zone. Echocardiography revealed an ejection fraction of 36.5% and fractional shortening of 17.6%, displacement of the middle portion of the inter-atrial septum into the left and right atria (the defect was 1.6cm) and the displacement was more than 10 mm. Atrial septal aneurysm is known to be a risk factor for cardiac failure and cerebrovascular events in middle aged and elderly individuals.

Key words: Atrial septal aneurysm

### **INTRODUCTION**

The atrial septal defect is divided into three main groups, which include primum, secundum and sinus venosus defects.<sup>1</sup> An atrial septal defect can exist unnoticed but sometimes it is associated with some cardiovascular events.<sup>2</sup> Atrial septal aneurysm is a complication of atrial septal defect.<sup>3</sup> Echocardiographically, atrial septal aneurysm can be classified into five types according to the motion of the aneurysm.<sup>4</sup> We report the first case of atrial septal aneurysm from our center and probably the first in Nigeria to the best of our knowledge.

### **CASE REPORT**

An 85-year-old female presented with fever, cough and chest pain for two weeks. Fever was said to be high grade and continuous, associated drenching night sweats. She had dizziness and headache but denied syncopal attacks, TIAs and stroke. Cough was productive of mucoid white sputum. The pleuritic chest pain was in the right hemithorax, she had dyspnoea on exertion. She denied pedal swelling, PND, orthopnoea and angina pain. About a year previously the patient was admitted for chest pain in another medical facility in the country. Patient is not a known diabetic but was diagnosed hypertensive for 5 years,

and has been regular with her drugs.

Physical examination showed a lethargic lady who was febrile ( $T = 8.2^{\circ}\text{C}$ ). The chest was symmetrical; she was tachypnoeac (respiratory rate was 55 cycles per minute) and had tracheal tugging. Chest expansion was reduced on the right lower zone; increased tactile and vocal fremitus in the same area and breath sounds were decreased in the right lower zone. The pulse was 100 beats per minute, regular, small volume and blood pressure was 90/60 mmHg. The jugular venous pulse was not raised and apex beat was diffuse. The heart sound was normal  $S_1$ ; the second heart sound ( $S_2$ ) was split (fixed) and loud in the pulmonary area and  $S_3$  gallop. There was ejection systolic murmur (grade 2/6) in the left lower sternal edge. The abdomen revealed a hepatomegaly of 6-8 cm smooth, non-pulsatile and no bruit. There was no ascites. The muscular skeletal and central nervous system was unremarkable. A diagnosis of right lobar pneumonia and hypertensive heart disease was made.

**Figure 1: Parasternal short axis view with inter-atrial septum (IAS) displaced into the left atrium (LA). RA = right atrium, AR = aortic root**



The packed cell volume was 38%, a normal white cell count of 4200 with

neutrophils of 78% and lymphocytes of 18% and 4% eosinophiles. The random blood sugar was 5.8mmol/l, urea was 3.3mmol/l,  $\text{Na}^+$  136 mol/l, potassium 2.6mmol/l (moderate hypokalaemia) and the sputum microscopy culture and sensitivity was negative. The chest x-ray revealed cardiomegaly with cardiothoracic ratio (CTR) of 0.53 and consolidation in the right lower zone. Abdominal ultrasound revealed an enlarged liver, which was of normal parenchyma. Electrocardiography did not show left or right ventricular hypertrophy.

Echocardiography revealed Left ventricular dimension of 5.1cm (diastolic) and 3.3 cm in systole. The ejection fraction was 36.5% and fractional shortening of 17.6% both being depressed. The inter atrial septum was seen bulging into the left atrium in the long parasternal and short axis views (Figure 1). The interatrial septum in the middle buckles into both left and right atrium. The defect measured 1.6 cm; and there was a bi-directional shunt established by color flow. The right atrium was enlarged (4.3 cm transverse diameter). There was mosaic colour flow across the inter atrial septum in area of the defect. An echocardiographic diagnosis of atrial septal defect and aneurysm was made.

## DISCUSSION

The incidence of atrial septal aneurysm in USA is put at 4.9%.<sup>5</sup> The incidence of atrial septal aneurysm in Nigeria is not available. This is probably because of the paucity of imaging techniques and diagnostic facilities. In the past reports on congenital heart disease in children was made, which was based mainly on clinical diagnosis.<sup>6</sup> A report from Abidjan stated that atrial septal defect was the commonest congenital heart disease.<sup>7</sup> Other reports from Nigeria, South Africa and

Uganda also did not mention atrial septal aneurysm<sup>8-10</sup>. The patient being reported is the first and literature search did not reveal such a report from any part of Nigeria. Burger reported an average age of 72 years in 42 patients investigated<sup>5</sup> and our patient was 80 years old. The male:female ratio was 1:1 from Burger's report.

The patient presented with symptoms and signs of chest infection (right lobar pneumonia) and mild cardiac decompensation. It is well known that a large ASD can lead to cardiac failure. In this patient the factor of hypertension, which had been there for years would have contributed to her cardiac decompensation. The echocardiography finding, apart from showing a depressed left ventricular function did not show marked left ventricular dilatation or hypertrophy of the septum or the LV posterior wall. Atrial septal aneurysm is known to be strongly associated with cerebrovascular events.<sup>7-9</sup> Atrial septal aneurysm is not the only risk factor for cerebrovascular events; patent foramen ovale has also been implicated.<sup>10,11</sup> The detection of atrial septal aneurysm is said to be of uncertain clinical relevance.<sup>12</sup> Ann *et al* stated that the role of atrial septal aneurysm as risk factors for cerebral ischaemia of unknown aetiology is still controversial.<sup>13</sup> Atrial septal defects often go unnoticed for decades because the physical signs are subtle and clinical sequelae are mild.<sup>14</sup> Virtually all patients who survive into their sixth decade are symptomatic. However, less than 50% of the patients survive beyond 40-50 years due to heart failure or pulmonary hypertension related to left to right shunt.<sup>14</sup> The use of trans-esophageal echocardiography is superior in the detection of atrial septal defect and atrial septal aneurysm when compared to transthoracic approach.<sup>15</sup> The most common abnormality

associated with ASA is interatrial shunt, particularly patent foramen ovale.<sup>5</sup> In our 3 years of cardiac imaging using 2 D echocardiography with Doppler and colour flow, this is the first case we have noted. It is possible that we could have missed ASA since our scan service offers only trans-thoracic echocardiography (TTE) not trans-esophageal echocardiography (TEE). The investigation of patients less than 50 year with unexplained stroke could probably yield more findings. Atrial septal defects occlusion devices have been tried to prevent systemic embolism.<sup>16-18</sup> The American Food and Drug Administration authorities have approved some devices for clinical use<sup>19-22</sup>. We believe that with improvement in cardiac imaging facilities and techniques in Nigeria, rare cardiac abnormalities and congenital heart diseases in adults will be well documented.

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