Journal of Bangladesh College of Physicians and Surgeons
Vol. 28, No. 2, May 2010

Dual Right Coronary Artery Associated with ASD and Pulmonary Stenosis

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(J Bangladesh Coll Phys Surg 2010; 28: 125-127)

Introduction:

Coronary artery anomalies occur in less than 1% of the cases undergoing coronary angiography, and constitute 1-2% of all congenital heart disease.[1] The origin of the circumflex artery from the right coronary artery (RCA) or the right sinus of Valsalva is the most commonly encountered anomaly and is usually well tolerated [2]. We report the clinical , echocardiographic and angiographic findings of symptomatic 45 years elderly lady with the atrial septal defect and double right coronary artery and pulmonary stenosis. To our knowledge, such associated lesion as founding this case has not been reported in the literature till date at home and abroad.

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Received: 13 August, 2008 **Accepted:** 7, August, 2009

Case Report:

A 45 years, non diabetic, non hypertensive lady presented with the palpitation for 2 years. The palpitation used to occur during exertion and relieved by rest and was associated with generalized fatigability. She has no history of chest pain, dizziness, dyspnoea, edema, features of hyperthyroidism, anxiety disorders. On general examination, her pulse was 88beats/min regular, Blood pressure 120/80 mm of Hg, prominent a wave in JVP. Precordium examination revealed left parasternal lift, wide fixed splitting of second heart sound, ejection systolic murmur in the left upper sternal border best heard in inspiration. Other systemic examination was unremarkable. Our clinical diagnosis was ASD with Pulmonary stenosis.

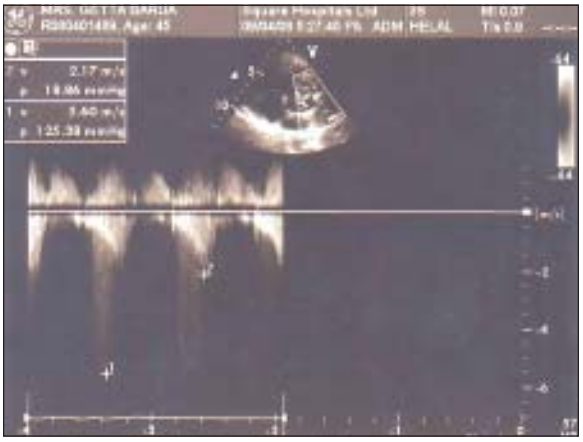

Fig.-1: *Doppler Echocardiography of 45 years elderly lady showing increased pressure gradient across the pulmonary valve.*

Fig.-2: *Transoesophageal Echocardiography of the same lady showing atrial septal defect osteum secondum type.*

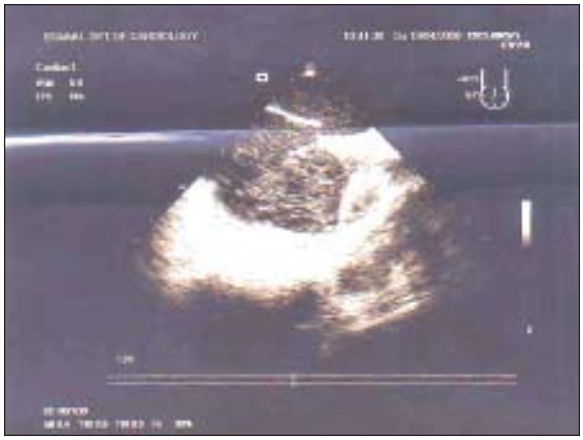

Fig.-3: *Transesophageal echocardiography of the same lady showing passage of air bubble from RA to LA through atrial septal defect.*

Her ECG showed right bundle branch block with right axis deviation and right ventricular hypertrophy. Transthoracic echocardiography showed dilated right atrium and right ventricle with right ventricular hypertrophy, pulmonary stenosis and pressure gradient of 125mm Hg across the pulmonary valve. Transesophageal echocardiography showed ostium secondum variety of atrial septal defect of 8.2mm size and air bubble passed from right atrium to left atrium.

Subsequently she underwent right heart catheterization during which the catheter passed from right autrium to left autrium, significant step up of oxygen on oxymetry was noted in mid right autrium and. Her Qp:Qs ratio was 0.9.Coronary angiogram was also done and revealed normal left main ,LCx, LAD and 2 right coronary arteries with single normal anatomical osteum and both RCA with their branches are normal and disease free.

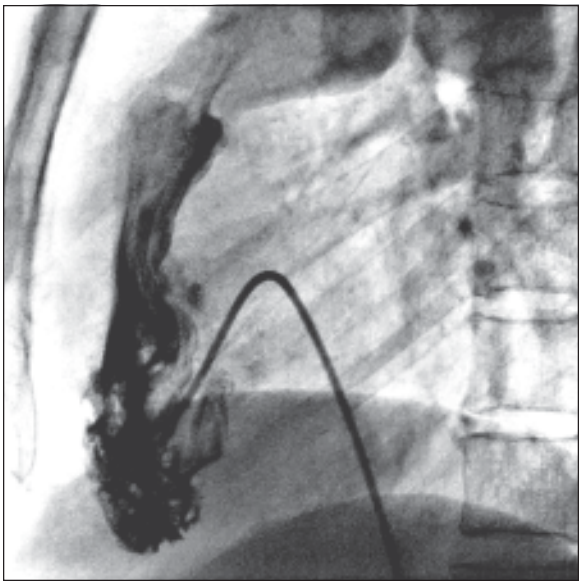

Fig.-4: *Right vetriculography(Lateral View) of the same lady showing Pulmonary stenosis of infundibular and valvular type.*

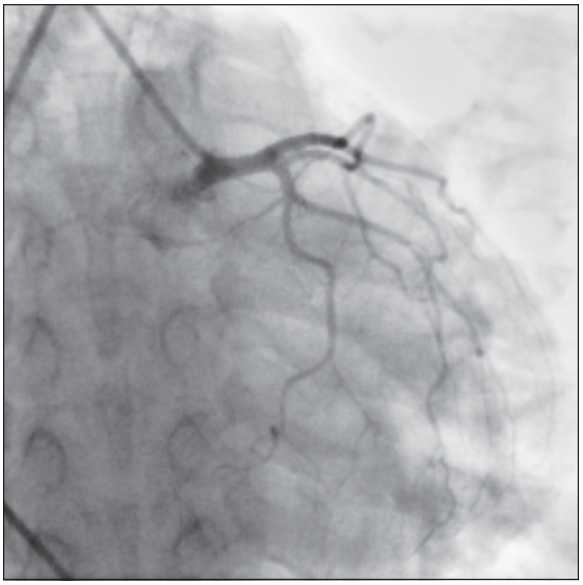

Fig.-5: *Coronary angiography of the same lady showing normal left coronary arterial system.*

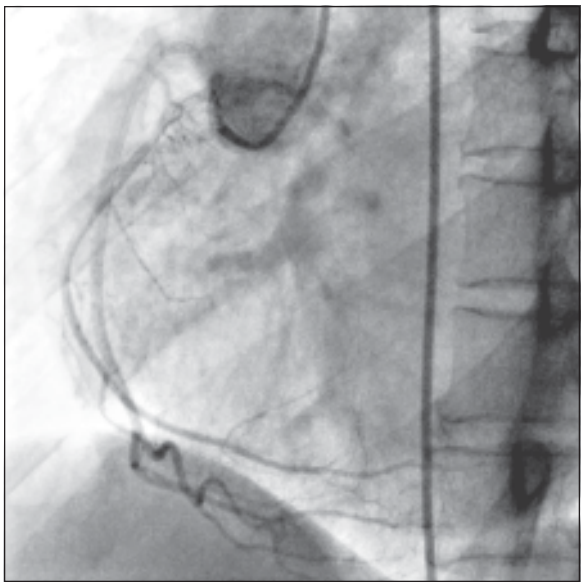

Fig.-6: *Coronary angiogram of the same patient showing double right coronary arteries with single normal anatomical ostium .Just after the origin there is duplication and both the arteries with their branches are normal and disease free.*

Discussion:

Coronary artery anomalies are encountered in less than 1% of the cases undergoing coronary angiography and in approximately 0.3% of autopsy series [3-5]. There is generally no gender difference in the incidence, and the most commonly encountered anomaly is the ectopic origin of coronary arteries [4].

The duplication of the RCA is extremely uncommon, and up to now, only nine cases have been reported [6]. Duplication of coronary arteries is accepted as a benign pathology. In RCA duplication, each artery may arise from a separate ostium or from the main trunk during the initial course of the RCA, and generally runs parallel, or one of them may course towards the anterolateral surface of the right ventricle. Coexistence of premature atherosclerosis as a result of altered blood flow kinetics has been a controversial issue [7,8].Among the previously reported cases of double RCA, there were only two patients with coexistent anomalies[9,10] and one patient with atherosclerosis[11]. Serkan T et al reported a case of ventricular septal defect and double right coronary artery originating from the left main coronary artery and the right coronary sinus [12]. In our case, there are two right coronary arteries with origin from the same osteum and are disease free.This anomaly is associated with ASD ostium secondum type and pulmonary stenosis. Such interesting coronary artery anomaly associated with other congenital heart disease, to our knowledge, is the first reported case in the world.

Conclusion:

Dual Coronary artery anomalies associated with other congenital heart disease is a rare condition. One should be cautious to evaluate such a patient during invasive and non invasive diagnostic procedures for proper management of such patient.

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