Introduction

Aorto-right atrial fistulas are lesions that result in heart failure if they are untreated. They result from rupture of congenital or acquired aortic aneurysms into the right atrium.

We report an unusual case of fistula from aneurysmal right sinus of Valsalva to the right atrium discovered after a non-penetrating trauma and treated surgically.

Case Presentation

A 37 year-old-man, with no past medical history, was a victim of a closed chest trauma by falling in a hole whose depth was 20 meters. He was admitted to the emergency department with stable vital signs. He had mandibular fractures. Cerebral CT scan showed no anomalies. Systolic blood pressure was 131 mm Hg, diastolic blood pressure was 40 mm Hg. The patient had dyspnea. There was an ecchymosis on the chest wall. A thrill was appreciated over the precordium.

Heart auscultation revealed a continuous murmur on the aortic site. A chest roentgenogram revealed an increased cardiac silhouette with bilateral alveolar opacities. There was a sinus tachycardia on the electrocardiogram, without ischemic signs or conduction disorders. A two-dimensional echocardiography revealed an important left to right shunt with a continuous flow from the aorta to the right atrium, with an aneurysm of the right sinus of Valsalva. The aneurysm was next to the right coronary artery. The aortic valve was without anomalies, and the right heart chambers were dilated. The echocardiography showed no other congenital heart diseases.

Thoracic CT scan detected a bilateral pulmonary edema with a mild pleural effusion. So, the patient underwent emergent surgical repair. A median sternotomy was performed. The pericardium was opened. A continuous thrill along the aorta was palpated.

Cardiopulmonary bypass was established between the aorta and two vena cavae. The intra-operative examination didn't find any hematoma around the sinus of Valsalva which was dilated. A fistula between the right sinus of Valsalva and the right atrium at the level of the right coronary artery was observed through a transverse aortotomy. This defect had 2 cm of diameter. There was no injury of the aortic valve. The defect was closed with a synthetic patch sutured with pledgeted sutures from inside the right coronary sinus at the level of the right coronary artery into the atrial wall (Figure 1). After surgery, the patient's recovery was uneventful and the patient was discharged on the fifth postoperative day. The patient remains asymptomatic and without murmurs 2 months after the surgery.

Discussion

Aneurysmal dilatation of the sinus of Valsalva is a cardiac anomaly caused by infective endocarditis, syphilitic aortitis, atherosclerosis, connective tissue disease or as a congenital abnormality discovered incidentally [1,2].

Rupture of sinus of Valsalva aneurysm into the cardiac chambers is a complication which predominantly affects males [3,4]. When
aneurysms arise in the right coronary sinus, they mostly communi-
cate with the right atrium, as was the case of our patient [3].

The most notable presenting feature of ruptured sinus aneurysm
is congestive heart failure with a left to right shunt [5]. The most
common clinical signs are dyspnea, pulmonary edema, with
continuous murmur. It can also be asymptomatic and discovered
incidentally. The clinical presentation depends on the fistula size and
the pressure and flow difference between communicating structures.

The diagnosis is performed by two-dimensional trans-thoracic
and trans-esophageal echocardiography, which demonstrates the
aneurysmal dilatation with abnormal flow through the ruptured
segment and are very helpful for the surgeon [3,6]. Three dimensional
flow visualization determines the precise location of the fistula [7].

The CT-scan and cardiac MRI are two non-invasive image
modalities that can provide important anatomical and functional
information and allow exact description of the lesion and help to
planning of cardiac surgery [8,9].

This case represents a fistulous connection between the
aneurysmal sinus of Valsalva and the right atrium that was
unrecognized, and was discovered after a non-penetrating chest
trauma in an adult, and describes surgical technique of closure.

M Chessa et al., [10] described a case of congenital fistula between
the right sinus of Valsalva and the right atrium without dilatation
of the sinus of Valsalva in an asymptomatic adult. This fistula was
sutured at its origin in the aortic sinus and at its termination in the
right atrium.

In our case, the diagnosis of the asymptomatic fistula was
suspected by clinical examination after chest trauma which showed
a precordial continuous murmur, and confirmed by tans-thoracic
echocardiography. The etiology may be congenital. It was closed
c Surgically with a prosthetic patch through a transverse aortotomy.

Conclusion

Aorto-atrial fistula is a fistulous communication that may present
as an incidental finding or with heart failure with pulmonary edema.

Surgical repair is the treatment of choice. We described a rare case
of aneurysmal right sinus of Valsalva ruptured into the right atrium in
adult patient revealed by a chest trauma. A successful surgical closure
of the fistula was undergone.

References