Pediyatrik Bir Hastada Asandan Aort Psödoanevrizması

PSEUDOANEURYSM OF THE ASCENDING AORTA IN A PEDIATRIC PATIENT

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Özet

Dokuz aylık infant, ventriküler septal defekt onarımını izleyen ikinci ayda dispne ve perikardiyal kist olarak tanımlanan mediastinal kitle nedeniyle hastanemize başvurdu. Akciğer grafisinde mediastinal genişleme, bilgisayarlı tomografide scan incelemesinde sternum ile kalp arasında sağ atriyuma bası yapan, heterojen dansitede büyük bir kitle görüldü. Transtorasik ekokardiyografi ile yapılan incelemede 4x4.5 cm boyutlarında, içinde hematom olan bir kitle gözlendi. Operasyon sırasında yapılan transözefageal ekokardiyografi ile asandan aortadan kitleye doğru türbülan, devamlı kan akımını ve asandan aort üzerindeki defekt gösterildi. Sternum açıldığında önceki ameliyata ait kardiyopleji kanülasyon yerinden gelişen psödoanevrizma görüldü. Fistül 6/0 prolen dikiş ile onarıldı. Hasta sorunsuz bir şekilde hastanemizden taburcu edildi.

Anahtar kelimeler: Çıkan aort, psödoanevrizma, kalp cerrahisi

Türk Göğüs Kalp Damar Cer Derg 2004;12:123-125

Summary

A 9-month-old infant admitted to our hospital with symptoms of dispnea and a mass defined as pericardial cyst two months after the ventricular septal defect repair. Chest film showed a widened upper mediastinum. Computerized tomography scans revealed a large mass with heteregenous density between the sternum and heart that compressed the right atrium. Two dimentional transthoracic echocardiography showed a 4x 4.5 cm sized mass with hematoma inside. Intraoperative transeosophageal echocardiography revealed an abnormal continuous blood flow directed from the ascending aorta to the mass. At the operation a false aneurysm originating from the former cardioplegic cannulation site was observed. The fistula was sewn with 6/0 prolene sutures. The patient recovered uneventfully.

Keywords: Ascending aorta, pseudoaneursym, cardiac surgery

Turkish J Thorac Cardiovasc Surg 2004;12:123-125

Introduction

Pseudoaneurysm of the aortic arch after cardiac surgery is a rare but fatal complication. Pseudoaneurysms usually arise at suture lines, needle holes, vent sites. Frequently a mediastinal or an aortic graft infection is the cause of the disruption at the suture area. In this article we reported a pseudoaneurysm of the ascending aorta developed two months after ventricular septal defect (VSD) repair in a pediatric patient.

Case Report

A seven month-old child, who had a history of frequent pulmonary infection, underwent a successful VSD repair operation in our hospital. The postoperative period was uneventful except for right pleural effusion needing a chest tube insertion one week after the operation. The patient was sent home on postoperative day tenth. Two months later, the patient was readmitted to a pediatric cardiology clinic elsewhere with symptoms of dyspnea and intercostal retractions. Chest roentgenogram showed mediastinal

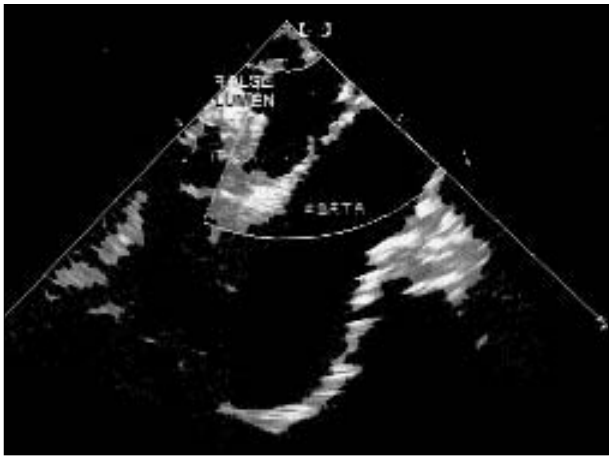

Figure 1. Chest roentgenogram demonstrating a marked enlargement of the right superior border.

enlargement (Figure 1), transthoracic echocardiography (TTE)

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Figure 2. Transthoracic echocardiography examination revealed a mass interpreted as a pericardial cyst (arrows). Ao, aorta, LU, left ventricle, LA, left atrium.

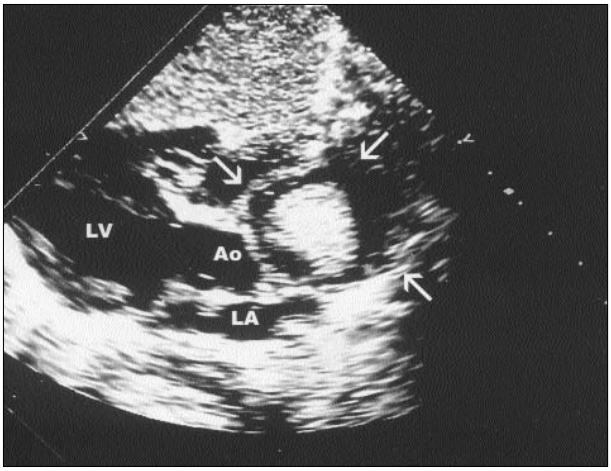

Figure 3. Noncantrast computerized tomographic scan demonstrates a mass extending from the anterior mediastinum towards superior vena cava (arrow).

Figure 4. Transesophageal echocardiographic view of the pseudoaneurysm arising from the ascending aorta.

examination revealed a mass interpreted as a pericardial cyst (Figure 2). Noncontrast computerized tomographic CT scan demonstrated a mass extending from the anterior mediastinum towards the right atrioventricular sulcus (Figure 3). The child was referred to our hospital on May 2001 for surgical treatment of the so called pericardial cyst. In the physical examination of the patient a systolic murmur was present at the right sternal border, no diastolic murmur was heard. The patient was afebrile with a normal white blood cell count. Electrocardiography was normal, TTE showed a good systolic function of the left ventricule and a 4x4.5 cm sized mass. No turbulent flow was seen in color doppler imaging. The relation of the mass with the cardiac chambers could not be defined. Reevaluation of the CT scan revealed a mass with a heteregeneous pattern, suggesting aneurysm. With these findings the patient was taken to the operating room. Following general anesthesia a transesophageal echocardiography (TEE) probe was inserted. A mass located anterior to the aorta was detected (Figure 4) and color flow signals, indicative of an aortic pseudoaneurysm, were shown inside the mass. The chest was opened through the sternum. A large mass occupying the anterior mediastinum and extending towards the right atrium and both venae cavas were encountered. A slight compression to the right atrium by the aneurysm was present. As the size and the position of the aneurysm precluded the cannulation and operation on cardiopulmonary bypass, a direct approach into the mass had to be chosen. After removal of fresh clots and aspiration of the blood from the sac, the defect turned out to originate from the former cardioplegic cannulation site, located on the anterior aspect of the ascending aorta and sewn with 6/0 prolene suture. The patient recovered uneventfully from the operation and discharged on postoperative day 7.

Discussion

An abnormally enlarged mediastinal on chest film following cardiac surgery requires a search for a vascular pseudoaneurysm. The diagnostic techniques are CT scan, magnetic resonance imaging, TTE, TEE and aortography [1-4]. Aortography is an invasive method, whereas CT scan is less invasive and preferred early in the evaluation of patients prior to reoperation [1]. Computerized tomographic scan can give information about the infection of the surrounding tissues, effusions, sternal infections. Recently, presence of an aortic false aneursym has been shown by TTE and TEE [2,5,6]. In this case the TTE did not reveal the false aneursym. In the operating room, the presence of the false aneurysm of the aorta was defined by TEE. Apart from identifying the communication between the aortic wall and the false aneurysm, TEE with colored doppler flow mapping is also used to identify the site of entry into the false aneurysm [2].

Causes of the aortic pseudoaneurysms are anastomotic defects, needle puncture sites, biopsies and cannulation sites [1]. Needle insertion sites for pressure measurements and cardioplegic solution injections are other potential pseudoaneurysm causes. Mycotic or infected pseudoaneurysms may result from hematogenous seeding of the suture lines [7].

Aortic pseudoaneurysms may be fatal. In a series of 1,000 Coronary bypass operations, pseudoaneurysm accounted for 3 % of late deaths [8].

Aortic pseudoaneurysms may present as a pulsatile

suprasternal mass, myocardial ischemia due to compression of grafts, chest pain, dysphagia, stridor, cardiac tamponade, asymptomatically or with signs of septicemia. Cerebral embolism from trombus in the aneurysm is also reported [2].
In this case there was no evidence of infection, preoperative blood cultures were negative for bacterial or fungal organisms. The most likely cause of this aneurysm was a puncture with the cardioplegia needle placed on the anterior surface of the aortic wall. Femoral cannulation might have been necessary in order to avoid excessive bleeding, if the aneurysm had been very close to the sternum. In our patient, femoral cannulation was not necessary. So we opened the aneurysm directly.
Two dimensional TEE and CT scan are the complementary techniques for reliable non-invasive assessment of the aortic pseudoaneurysm.

References

1. Sullivan KL, Seiner RM, Stanton SN, et al. Pseudoaneursym of the ascending aorta following cardiac surgery. Chest 1988;92:138-43.
2. Katsumata T, Moorjani N, Vaccari C, Westaby S. Mediastinal false aneurysm after thoracic aortic surgery. Ann Thorac Surg 2000;70:547-52.
3. Aoyagi S, Akashi H, Kawara T, et al. False aneurysm of the ascending aorta with fistula to the right atrium. Noninvasive diagnosis by computed tomographic scan and two- dimentional echocardiography with successful repair. Thorac Cardiovasc Surg 1994;42:58-60.
4. Van't Hof AWJ, Leicher FG, Schipper CW, Hoorntje JCA. Presentation of a pseudoaneurysm as a supravalvular aortic stenosis 20 years after aortic root reconstruction. Eur J Cardiothorac Surg 1998;13:481-3.
5. Weinstein S, Horvath KD, Romney BE, Michler RE. Enlarging mediastinal mass after cardiac transplantation. Ann Thorac Surg 1997;64:845-7.
6. Milas BL, Savino JS. Pseudoaneursym of the ascending aorta after aortic valve replacement. J Am Soc Echocardiogr 1998;11:303-6.
7. McGiffin DC, Galbraith AJ, McCarthy JB, Tesar PJ. Mycotic false aneurysm of the aortic suture line after heart transplantation. J Heart Lung Transplant 1994;13:926-8.
8. Keon WJ, Bedard P, Akyureki Y, Brais M. Causes of death in aortocoronary bypass surgery: Experience with 1,000 patients. Ann Thorac Surg 1977;23:357-60.