Adventitious Aortic Pulmonary Fistula

Ahmad Mirdamadi[1], Mohsen Mirmohammadsadeghi[2], Farzad Marashinia[3], Mohsen Nourbakhsh[4]

Abstract:

Aortic pulmonary fistula is an uncommon complication of an aortic aneurysm that can lead to several complications; by the way it is a highly fatal occurrence at the end. Young man with history of aortic valve replacement was admitted due to recent dyspnea. Diagnosis was determined aortic pulmonary fistula, but before the surgery he died. Although this group of patients have poor prognosis, early and accurate diagnosis and management can save their lives. On the other hand we should evaluate aorta while managing aortic valve disorder.

Keywords: Aortic pulmonary fistula, aortic aneurysm

Introduction:

Thoracic aortic aneurysm is less common than abdominal aortic aneurysm, but it may have major complications including aortic rupture, aortic dissection, and congestive heart failure. These are the main causes of death in patients with aortic aneurysm (1,2) Risk factors for an aortic aneurysm are having heart disease, smoking, diabetes, family history of aortic aneurysm and age more than sixty. Incidence of an aortic aneurysm in men is more than women (3).

Aortic pulmonary fistula is an uncommon complication of aortic aneurysm that can lead to several complications such as rapid left-to-right shunt, right heart failure and death (4). Aortic pulmonary fistula is a congenital heart disorder that explores early in the life, although it is seen acquired in atherosclerotic, syphilitic, post endocarditis and rheumatologic diseases such as Marfan (5).

In patients with aortic pulmonary fistula, the most common symptoms are chest pain, shortness of breath and other respiratory symptoms such as dyspnea and hemoptysis. Early and accurate diagnosis is essential for appropriate management and treatment of these patients. Echocardiography is the commonly used imaging technique for accurate evaluation. (6)

Although aortic pulmonary fistula secondary to thoracic aortic aneurysm is a highly fatal occurrence and mortality rate is very high, few cases of successful surgical repair were reported (7, 8, 9).

Report: casE

A seventeen year old man referred to our hospital in November 2010. He had been suffering from dyspnea since one month before. He was admitted to hospital for aortic valve replacement five years ago. He had received Carvedilol, Furosemide,

Mohsen Nourbakhsh3,Email: mohsen.nourbakhsh@gmail.com
1- MD, Assistant Prof. of cardiology, Department of Cardiology, Najaf Abad Branch, Islamic Azad University, Isfahan, Iran
2-MD, Assistant Prof. of cardiac surgery, Department of Cardiac surgery, Isfahan University of Medical Sciences, Isfahan, Iran
3- MD, Research Assistant,MABA Research Center Tehran, Isfahan University of Medical Sciences, Isfahan, Iran
4- MD, Research Assistant,
Corresponding Author:
Mohsen Nourbakhsh, MD, Research Assistant, Isfahan University of Medical Sciences, Isfahan, Iran
Email: mohsen.nourbakhsh@gmail.com

Digoxin and Warfarin. In physical exam he had tachypnea. He had micro chromic microcytic anemia and increased hepatic enzymes. Other lab analyzes and physical exams were normal.

While we evaluated anemia, we could observe pulmonary hypertension in transthoracic echocardiogram. For more evaluation second echocardiography was done and the aneurysm of aortic root was seen to be perforated to pulmonary artery. So we could recognize this aortic pulmonary fistula apart from pulmonary hypertension (Figure 1, 2).

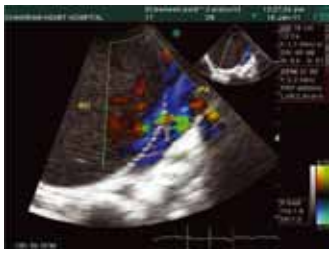

Figure 1

Figure 2

Computerized tomographic scanning confirmed diagnosis (Figure 3). Patient was admitted for operation, but before any interventions died due to cardiopulmonary arrest.

Figure 3

Discussion:

Aortic pulmonary fistula can develop due to atherosclerotic, post endocarditis and rheumatologic diseases (5), construct iatrogenic (10) or following previous cardiac surgery like our patient or a 64-year-old female in study of Maki and Williams (11). In this patient in echography aortic pulmonary fistula was determined in aortic root. Oguz Tagdemir reported an unusual outcome of an ascending aorta aneurysm ruptured into the main pulmonary trunk. (12) A transverse aortic arch aneurysm penetrating to left pulmonary artery is reported by Crawford ES (13).

Kim et.al reported aneurysm originating from the ascending aorta and proximal left anterior descending coronary artery, which were connected to pulmonary trunk (14).

We should think about aorta disease while managing aortic valve disorder and if we suspect to aorta aneurysm during this time, we must operate the aortic root other than aortic valve or do close observations for such patients. Ruptured aortic aneurysms have poor prognosis and death occurs in a great majority of patients similar to this case. Although some successful surgical operations were reported (6, 7, 8, 11) We can conclude, early and stringent diagnosis is indispensable for appropriate treatment and lifesaving of patient with aortic pulmonary fistula.

References:

1. Spurgeon D. US screening programme shows high prevalence of aortic aneurysm. BMJ. 2004; 328:852
2. Zips DP, Libby P, Bonow RO, Braunwald E. Braunwald's Heart disease: A textbook of cardiovascular medicine. 7th ed. Philadelphia: Sauders; 2005. pp. 1410–1415
3. David Spurgeon US screening programme shows high prevalence of aortic aneurysm BMJ. 2004 April 10; 328(7444): 852
4. Belgi A, Altekin E, Yalcinkaya S, Tüzüner FE Acquired aortopulmonary fistula: a case of ruptured aneurysm of the thoracic aorta Anadolu Kardiyol Derg. 2003; 3:275–278
5. Massetti M, Babatasi G, Rossi A, Kapadia N, Neri E, Bhoyroo S, Gerard JL, Commeau P, Khayat A.Aortopulmonary fistula: an uncommon complication in dystrophic aortic aneurysm.Ann Thorac Surg. 1995 Jun;59(6):1563-4.
6. MacIntosh EL, Parrott JC, Unruh HW Fistulas between the aorta and tracheobronchial tree. Ann Thorac Surg 1991; 51:515-9
7. Lahey SJ Successful surgical management of an aortic arch aneurysm with acute aorto-pulmonary fistula. Ann Thorac Surg 1993; 55(4):995–7.
8. Coselli JS, LeMaire SA, van Cleve GD. Rupture of a dissecting thoracic aortic aneurysm into the pulmonary artery: successful surgical repair. Cardiovasc Surg 1995; 3(6):697–701
9. Atay Y, Can L, Yagdi T, Buket S. Aortopulmonary artery fistula Presenting with congestive heart failure in a patient with aortic dissection. Tex Heart Inst J 1998; 25(1):72–4.
10. Vida VL, Biffanti R, Stellin G, Milanesi O Iatrogenic Aortopulmonary Fistula Occurring After Pulmonary Artery Balloon Angioplasty: A Word of Caution Pediatr Cardiol. 2012 May 29
11. Maki AC, Williams ML.Ascending aortopulmonary fistula 40 years after previous cardiac surgery.J Card Surg. 2011 Mar; 26(2):210-1
12. Oguz Tasdemir, Kerem Vural, Ahmet Santas, Bektas Battaloglu and Kemal Bayazit, Aorto-pulmonary artery fistula: An unusual complication of ascending aortic aneurysm,Ann Thorac Surg 1992;53:1104-1106
13. Crawford ES. Diseases of the Aorta Baltimore: Williams and Wilkins 1984,28
14. Myoung-Joon Kim, Hyuk-Yong Kwon, Chi-Sung Hwang, Ji-Hyun Kang, Hyeon-Jin Kim, Seong-Man Kim, Hyeon-Gook Lee, Tae-Ik Kim, Kyoung-Im Cho, Dual Fistulas of Ascending Aorta and Coronary Artery to Pulmonary Artery Korean Circ J. 2011 April; 41(4): 213–216