

Pulsating Thoracic Mass as a Main Symptom of Gigantic Pseudoaneurysm of the Ascending Aorta

Antonio Merchán, Javier Tejada^a, Tomás Pineda^b, José R. López-Mínguez, Manuel Robles^a and Pedro Fresneda^b

Servicios de Cardiología Intervencionista, ^aCuidados Intensivos y ^bCirugía Cardiovascular. Hospital Regional Universitario Infanta Cristina. Badajoz.

The pseudoaneurysms of the ascending aorta are very infrequent but their diagnosis is important because of the associated high mortality. They usually appear in patients who have undergone aortic-related surgery, but the time that passes until they appear can be very prolonged and suspicious signs and symptoms can be quite anodyne. We present two cases of pseudoaneurysms of ascending aorta in two patients who underwent cardiovascular operations several months before, which were of such a considerable size that the first and practically the only symptoms were the sudden appearance of a pulsating thoracic mass because of pseudoaneurysm compression at this site.

Key words: *Aneurysm. Aorta. Surgery.*

Full English text available at: www.revespcardiol.org

Pseudoaneurysms of the ascending aorta are unusual clinical entities that tend to be produced in patients who have suffered serious thoracic trauma^{1,2} or who have been undergone cardiovascular surgery, particularly aortic valve replacement³⁻⁵ or the insertion of a single or bivalve aortic conduit.⁶⁻⁸

Peri-operative mortality in patients who have been diagnosed and who undergo new surgical intervention for resection of pseudoaneurysm tends to be elevated, with the few published series reporting a rate of approximately 50%.^{9,11} Knowing the signs and

Masa pulsátil torácica como síntoma principal de pseudoaneurisma gigante de aorta ascendente

Los pseudoaneurismas de aorta ascendente son poco frecuentes, pero es importante su diagnóstico por la alta mortalidad que presentan. Suelen aparecer en pacientes que han sido sometidos a intervenciones quirúrgicas relacionadas con la aorta, pero el tiempo transcurrido hasta su aparición puede ser muy prolongado y los signos y síntomas de sospecha suelen ser bastante anodinos. Presentamos dos casos de pseudoaneurismas de aorta ascendente en dos pacientes sometidos varios meses antes a diferentes intervenciones cardiovasculares, de tamaño tan considerable que los primeros y casi únicos síntomas fue la súbita aparición de sendas masas pulsátiles en el tórax por la compresión de los pseudoaneurismas sobre dicha zona.

Palabras clave: *Aneurisma. Aorta. Cirugía.*

symptoms leading to early diagnosis could provide better control of this rare, but serious, disease.

We present 2 cases of patients who had undergone surgical intervention (1 for type A dissection of the aorta and the other for coronary artery disease with aortocoronary graft of the saphenous vein) who later presented with a giant pseudoaneurysm; the first and almost exclusive symptom was the appearance of a pulsating thoracic mass, 1 suprasternal and the other midsternal.

CLINICAL CASES

Case 1

A 35-year-old man, deaf-mute from birth and a smoker, underwent emergency surgery for dissection of a type A ascending aorta, aortoplasty was performed with a Dacron patch, re-suspension of the aortic valve, and saphenous graft to the right coronary

Correspondencia: Dr. A. Merchán Herrera.
Fernando Sánchez Sampedro, 1, 5.º. 06003 Badajoz. España
E-mail: merchanh@inicia.es

Recibido el 29 de marzo de 2001.
Aceptado para su publicación el 23 de agosto de 2001.



Fig. 1. Left anterior oblique projection aortography at 60°. A rupture of the ascending aorta with a contrast pass to a giant aortic aneurysm can be seen.

artery by detachment of same. The post-operative course proceeded without complication, and an echocardiogram and magnetic resonance scan prior to discharge were normal. Six months later, the patient came to the hospital with a 2-day history of a mass increasing in size and seeping in the suprasternal



Fig. 2. Magnetic nuclear resonance T1 sagittal image. A large round image next to the ascending aorta is present which is in contact with the sternum, composed of thrombotic material and bloody liquid indicative of an aortic pseudoaneurysm.

hollow and that was interfering with sleep. He did not complain of fever or arterial hypertension. Upon examination, a palpable mass the size of a golf ball was found on the sternum in the area of the suprasternal hollow that did not correspond to any of the neck arteries. Aortography (Figure 1) was performed immediately and revealed a giant pseudoaneurysm of the ascending aorta in the anterior region of the thorax compromising the aortic lumen and extending to the sternum. A contrast view showed the pseudoaneurysm on top of the aortic cusps, without appreciable aortic insufficiency or changes in the supra-aortic trunks. Surgery was again performed, and revealed a broken aortic wall with detachment of the patch placed during the previous surgery. A Bjork number 25 prosthesis was placed in the aortic position, and a 30mm Dacron tube was anastomosed with respect to the left coronary ostium and with an end to end anastomosis of the right internal mammary artery involving the bridge from the previous saphenous graft to the right coronary artery. The patient died 10 days after the second procedure due to multiple organ failure.

Case 2

A 57-year-old man with a history of arterial hypertension, anterior myocardial infarct 6 years previously, and surgery for craniopharyngioma 2 years earlier with residual diabetes insipida. Because of his unstable angina, cardiography was performed and revealed large lesions of the left descending anterior artery and the marginal obtuse artery. Surgery was performed, and 2 coronary grafts were placed from the left internal mammary artery to the descending artery, and from the saphenous vein to the marginal obtuse vein. The post-surgical course was uneventful except for superficial damage to the sternum caused by the incision and a slight mediastinitis without fever. Five months after surgery, a pulsatile mass was observed in the midsternal area protruding from the incision. A magnetic resonance scan was performed (Figure 2), showing a large collection of blood in the area adjacent to the ascending aorta compatible with an aortic pseudoaneurysm. This was later confirmed by aortography, with contrast view showing the contrast medium from the aorta to the pseudoaneurysmal cavity in the area corresponding to the anastomosis near the venous graft. Surgery was again performed, and a Dacron patch was placed and fixed in the area of the aortic rupture. The patient died 34 days later due to

septic shock secondary to bilateral nosocomial pneumonia.

DISCUSSION

Although rare, the possibility of a pseudoaneurysm of the ascending aorta must be considered in patients who have previously undergone coronary or aortic surgery, especially those with aortic valve replacement, where the incidence is approximately 0.6%,¹¹ and in composite aortic grafts⁶, as occurred in our first patient. In the second patient, the pseudoaneurysm developed after coronary bypass surgery, which occurs even less frequently and is seldom described in the literature. We have found only 4 published cases in a recent 10-year study carried out by Razzouk et al.⁹ This study involved 13 patients diagnosed with pseudoaneurysm of the aorta with prior surgical intervention. The sites of aortic rupture were the aortotomy³, the site of aortic cannulation², the distal anastomosis of the ascending aortic graft⁴, and the proximal anastomosis of the venous graft, with the last 2 locations being the same as in our 2 cases.

The amount of time elapsed between surgical intervention and the discovery of the pseudoaneurysm varied greatly, ranging from hours¹⁰ to weeks² to years later.³ There is even 1 case described which occurred 26 years after the intervention.¹² In the cases secondary to thoracic trauma, years can pass between the time of the trauma and the appearance of the pseudoaneurysm, 1 case being reported as long as 26 years later.⁹ The most common causes of pseudoaneurysm of the ascending aorta in patients with previous surgical intervention tend to be damage at the suture site¹¹ and infections of the prosthesis.¹³ Other less frequent causes such as hydatidosis¹⁴ and infection of the suture line in a cardiac transplant,¹⁵ have been described. Mediastinitis can also create a pseudoaneurysm of the ascending aorta, as has been recently reported, which, as in our second case, also involved the proximal anastomosis site of a venous graft to the right coronary artery.¹⁶ Prior dilatation of the aorta has been implicated by some authors,^{10,11} as a predisposing factor for the occurrence of aortic pseudoaneurysms in patients who undergo aortic valve replacement. These can produce fistulas to other cardiac chambers such as the right atrium¹⁷ or to the lungs and esophagus.⁹ They can also produce compression in the neighboring structures such as the superior vena cava and the pulmonary artery.¹⁸ Usually, the initial diagnosis of a suspected

pseudoaneurysm occurs by casual discovery on an x-ray or scan. In other cases it is secondary to treatment of a persistent fever in the case of infections of prostheses,¹³ by dyspnea or congestive heart failure in the case of fistulas to other cardiac chambers,¹⁷ by hemoptysis or massive hematemesis in the aortobronchial or esophagoaortic fistulas,⁹ or by symptoms characteristic of superior vena cava syndrome when it produces compression of same. In our 2 cases the indicative sign was the sudden appearance of a pulsatile thoracic mass secondary to a pseudoaneurysm so large that it touched and compromised the thoracic wall. A recent tumor in any part of the thorax that is pulsatile in a patient who has undergone surgery (regardless of when) for any cardiac disease and patients who have had thoracic trauma should raise the suspicion of a giant pseudoaneurysm of the ascending aorta, prompting initiation of to confirm the presence of same.

REFERENCES

1. Prater SP, Leya FS, McKiernan TL. Post-traumatic pseudoaneurysm of the aorta: an accidental finding two decades later. *Clin Cardiol* 1994; 17: 566-568.
2. Castelo V, Fernández F, González-Juateneý JR, Amaro A, García-Acuña JM, Rubio J et al. Pseudoaneurisma aórtica e infarto agudo de miocardio secundario a trauma torácico. *Rev Esp Cardiol* 1994; 47: 699-703.
3. Albat B, Leclercq PF, MssnerPellenc P, Missov E, Thevenet A. False aneurysm of the ascending aorta following aortic valve replacement. *J Heart Valve Dis* 1994; 3: 216-219.
4. Milas BL, Savino JS. Pseudoaneurysm of the ascending aorta after aortic valve replacement. *J Am Soc Echocardiogr* 1998; 11: 303-306.
5. Linz PE, Wallace RB, Baker WP. Long-term follow-up and resection of a postoperative false aortic aneurysm. *Ann Thorac Surg* 1993; 55: 758-759.
6. Yamashita C, Tsuji Y, Yoshimura M, Kozawa S, Okada M. Successful surgical treatment of a pseudoaneurysm after composite graft replacement of the aortic valve and ascending aorta: report of two cases. *Surg Today* 1994; 24: 1019-1022.
7. Beyer ME, Voelker W, Hoffmeister HM. Diagnosis of pseudoaneurysm of the ascending aorta after implantation of a valved conduit by multiplane transesophageal echocardiography. *Z Cardiol* 1994; 83: 595-598.
8. Fukuda I, Ohuchi H, Matsuzaki K. A repair of the aortic pseudoaneurysm after ascending aortic graft in acute type A dissection. A case report. *Kyobu Geka* 1995; 43: 502-505.
9. Razzouk A, Gundry S, Wang N, Heyner R, Sciolaro C, Van Arsdell G et al. Pseudoaneurysms of the aorta after cardiac surgery or chest trauma. *Am Surg* 1993; 59: 818-823.
10. Hedoire F, Grollier G, Maragnes P, Valette B, Lognone T, Breut C et al. Dissection of aorta after valve replacement. *Arch Mal Coeur Vaiss* 1991; 84: 967-974.
11. Presbitero P, Aruta E, Rabajoli F, Agaccio G, Donegani E, Orzan

- F et al. Aortic dissection after aortic valve replacement: clinical and anatomic features. *G Ital Cardiol* 1992; 22: 941-947.
12. Sato O, Tada Y, Miyata T, Shindo S. False aneurysms after aortic operations. *J Cardiovasc Surg (Torino)* 1992; 33: 604-608.
 13. Soyer R, Bessou JP, Bouchart F, Redonnet M, Mouton-Schleifer D, Arrignon J. Surgical treatment of infected composite graft after replacement of ascending aorta. *Ann Thorac Surg* 1994; 58: 425-428.
 14. Biglioli P, Spirito R, Roberto M, Paolari A, Agrifoglio M, Pompilio G et al. False hydatid aneurysm of the thoracic aorta. *Ann Thorac Surg* 1995; 59: 524-525.
 15. McGiffin DC, Galbraith AJ, McCarthy JR, Tesar PJ. Mycotic false aneurysm of the aortic suture line after heart transplantation. *J Heart Lung Transplant* 1994; 13: 926-928.
 16. Inoue T, Sato S, Kato H, Sakagoshi N, Inoue M, Takenaka H. Successful treatment of an infected pseudoaneurysm of the ascending aorta with omental transfer: a case report. *Kyobu Geka* 1995; 43: 1166-1170.
 17. Aoyagi S, Akashi H, Kawara T, Orypji A, Kasuga K, Pishi K et al. False aneurysm of the ascending aorta with fistula to right atrium. Noninvasive diagnosis by computed tomographic scan and two-dimensional echocardiography with successful repair. *Thorac Cardiovasc Surg* 1994; 42: 58-60.
 18. Seki K, Abe T, Kuirbayashi R, Sekine S, Shibata Y, Yamagishi T. Aortic dissection with giant pseudoaneurysm as a rare late complication of aortic valve replacement. A case report. *Kyobu Geka* 1994; 42: 1382-1387.