Korean J Thorac Cardiovasc Surg 2011;44:304-306 □ Case Report □
ISSN: 2233-601X (Print) ISSN: 2093-6516 (Online) DOI:10.5090/kjtcs.2011.44.4.304

Azygos Vein Aneurysm - A Case for Elective Resection by Video-assisted Thoracic Surgery

Deok Heon Lee, M.D.*, Dong-Yoon Keum, M.D.*, Chang-Kwon Park, M.D.*,
Jae-Bum Kim, M.D.*, Byung-Hak Rho, M.D.**

An azygos vein aneurysm is a very rare cause of a posterior mediastinal mass. Once the diagnosis has been confirmed, no treatment is usually required. However, the aneurysm can thrombose, and this may lead pulmonary thromboembolism, or the aneurysm may rupture. In these instances, the excision of the mass is recommended. Video-assisted thoracic surgery techniques have considerably improved. If it is necessary to remove the aneurysm, video-assisted thoracic surgery may be a good option for surgical treatment. We report a case of an aneurysm of the azygos arch that was successfully resected by video-assisted thoracic surgery.

Key words: 1. Azygos vein
2. Mediastinum
3. Video-assisted thoracic surgery
4. Aneurysm

CASE REPORT

A 38-year-old-woman was admitted to our hospital for evaluation of a posterior mediastinal mass that had been found from annual medical check-up six weeks ago. She had never had any symptoms such as dyspnea, cough, chest pain or weight loss. Her past medical history was unremarkable, and no significant trauma was recorded. There were no abnormal findings on physical examination, electrocardiography, blood analysis, or arterial blood gas analysis in room air. The posteroanterior and lateral chest radiograph were found to be normal. Dynamic contrast-enhanced Computed Tomography (CT) of the thorax showed a well-defined and oval shaped mass of 3.0 cm diameter at the right tracheobronchial angle. The mass was posterior to the superior vena cava, and superior to the right main bronchus and the arch of the azygos vein. After injection of contrast medium, the mass was markedly enhanced and the enhancement progressed from the posterior aspect of the mass, which became homogeneously enhanced during the equilibrium phase. The findings indicated a vascular lesion. No filling defect was identified within the lesion to suggest thrombus formation (Fig. 1). Since the patient had a strong desire for the mass to be resected, elective thoracoscopic surgery was performed. Under general anesthesia with one-lung ventilation, a thoracoscopic trocar for the 5-mm videoteloscope (Karl Storz Inc.) was placed at the seventh intercostal space on the midaxillary line, and another 5-mm trocar and 11.5-mm thoracoport were placed at the fourth intercostal space and the sixth intercostal space on the anterior axillary line. A round and purple colored saccular

*Department of Thoracic and Cardiovascular Surgery, College of Medicine, Keimyung University
**Department of Radiology, College of Medicine, Keimyung University
Received: January 31, 2011, Revised: February 18, 2011, Accepted: April 1, 2011
Corresponding author: Dong-Yoon Keum, Department of Thoracic and Cardiovascular Surgery, College of Medicine, Keimyung University, 194, Dongsan-dong, Jung-gu, Daegu 700-712, Korea
(Tel) 82-53-250-7059 (Fax) 82-53-250-7307 (E-mail) kdy@dsmc.or.kr

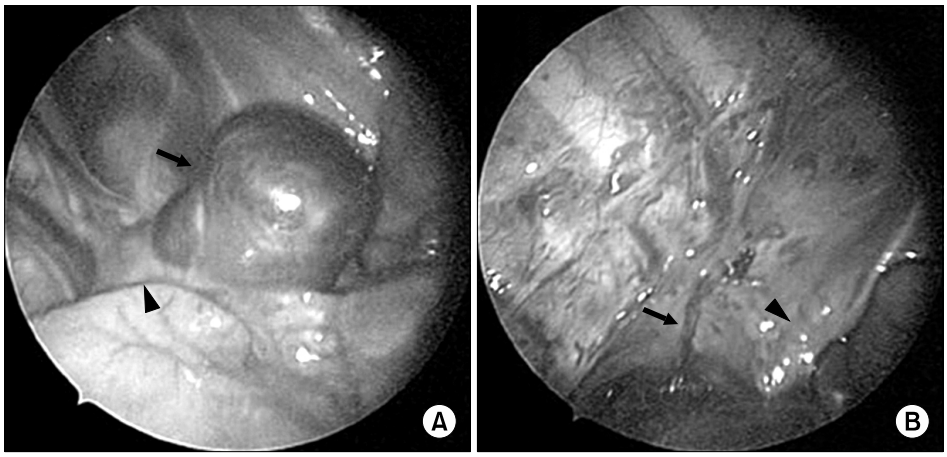

Fig. 2. (A) 2×2×3 cm round and purple saccular aneurysm (Arrow) originating from the azygos vein arch (Arrow head) was identified during the operation. (B) The resected margin of the aneurysm (Arrow) was clear and venous drainage from the azygos vein into the superior vena cava (Arrow head) was intact.

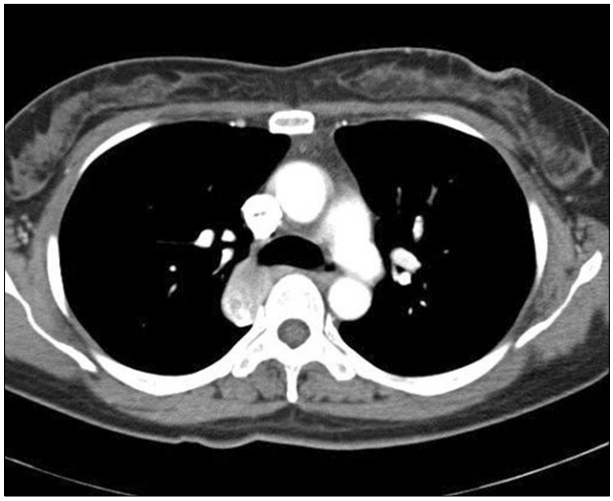

Fig. 1. Dynamic contrast enhanced computed tomography showed a well-defined and oval-shaped mass at the right tracheobronchial angle, and the mass was markedly enhanced after the injection of contrast medium.

aneurysm originating from the azygos vein arch was identified, and the size of the aneurysm was 2×2×3 cm (Fig. 2A). The azygos vein and superior vena cava adjacent to this aneurysm was normal in appearance, and there was no evidence of peri-aneurysmal adhesion or fibrosis and intraluminal thrombus. The aneurysm was directly resected close to its junction with the azygos vein arch with one 45-mm endoscopic stapler (Autosuture, Norwalk, CT, USA) with a white load. The resected margin of the aneurysm was clear and venous drainage from the azygos vein into superior vena cava was intact (Fig. 2B). The entire operation took 30 minutes". There were no postoperative complications, and the patient was discharged on the postoperative third day. Histopathological examination confirmed the diagnosis of an azygos vein aneurysm.

DISCUSSION

Aneurysms of the azygos vein are very rare and the etiology is unknown, but most aneurysms occur in patients with heart failure, portal hypertension, or malformations of the inferior vena cava including partial or total agenesis, or obstruction of the inferior vena cava by a tumor or lymph node [1]. Blunt trauma and anomalies in the formation of the embryological vein that empties into the transverse part of the azygos vein can be implicated as some causes of aneurysm of the azygos vein [2].

Some studies have reported that dynamic enhanced-CT, MRI, and transesophageal echography are helpful for choosing the correct diagnosis [1,3]. Watanabe et al. reported that there was great enhancement in the early phase at the site near the azygos arch, but there was little enhancement at the site away from the arch in dynamic enhanced-CT [3]. In our report, a dynamic enhanced-CT showed similar features.

An aneurysm of azygos vein is usually asymptomatic, and may be detected on a chest radiograph. However, when the aneurysm is enlarged, it may compress the adjacent organs, such as the right main bronchus or the superior vena cava [4]. Also, the aneurysm can thrombose, and this may lead pulmonary thromboembolism. Theoretically, the rupture of the

aneurysm may occur [5,6].

An appropriate treatment strategy and indications for surgical resection are not yet clear. However, Gnanamuthu and associates proposed that the treatment of choice is complete surgical excision after ensuring it is a primary idiopathic lesion and not secondary to elevated venous pressure or increased flow, and that the floating thrombus within the lumen raises the probability of recurrent pulmonary embolism or propagation of the thrombus [2]. Even though the mass was resected upon the request of the patient in our case, we agree absolutely to their suggestions.

We removed the mass successfully by video-assisted thoracic surgery with one endo-stapler device. During the operation, the aneurysm was slightly torn, but the bleeding was not serious because of the lower venous pressure, and so we had no problems resecting the aneurysm. Also, venous drainage from the azygos vein into the superior vena cava was intact after the end of the operation. We suggest video-assisted thoracoscopic resection if it is necessary to remove an azygos vein aneurysm.

REFERENCES

1. Léna H, Desrues B, Heresbach D, et al. *Azygos vein aneurysm: contribution of transesophageal echography.* Ann Thorac Surg 1996;61:1253-5.
2. Gnanamuthu BR, Tharion J. *Azygos vein aneurysm--a case for elective resection.* Heart Lung Circ 2008;17:62-4.
3. Watanabe A, Kusajima K, Aisaka N, Sugawara H, Tsunematsu K. *Idiopathic saccular azygos vein aneurysm.* Ann Thorac Surg 1998;65:1459-61.
4. Podbielski FJ, Sam AD 2nd, Halldorsson AO, Iasha-Sznajder J, Vigneswaran WT. *Giant azygos vein varix.* Ann Thorac Surg 1997;63:1167-9.
5. Icard P, Fares E, Regnard JF, Levasseur P. *Thrombosis of an idiopathic saccular azygos aneurysm.* Eur J Cardiothorac Surg 1999;15:870-2.
6. Gomez MA, Delhommais A, Presicci PF, Besson M, Roger R, Alison D. *Partial thrombosis of an idiopathic azygos vein aneurysm.* Br J Radiol 2004;77:342-3.