

Case Report

Thoracoscopic surgery for Castleman's disease in the posterior mediastinum

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Abstract. A 15-year-old male athletic student was referred to our hospital with an abnormal shadow found on a routine chest X-ray. A preoperative clinical diagnosis of neurogenic tumor was suspected. The patient underwent total resection of the tumor through thoracoscopic surgery using four 12-mm instrument ports in order to spare the muscle and chest wall. Bleeding increased just after dissection of the parietal pleura surrounding the tumor. Hence, the intercostal arteries and veins, which are potential blood supply and drainage vessels of the tumor, were ligated with part of intercostal nerves before removing the tumor, and then the tumor was completely excised with the surrounding soft tissues. The microscopic features were characteristic of the hyaline vascular type lesions seen in Castleman's disease. Profuse bleeding is often reported during resection of the tumor originated from posterior mediastinum. The present case provides the first report that thoracoscopic surgery is technically feasible and can be performed safely and successfully for the treatment of Castleman's disease in the posterior mediastinum.

Keywords: Castleman's disease, bleeding, thoracoscopic surgery, posterior mediastinum

Introduction

Castleman's disease was first described in 1954 as a type of benign lymph node hyperplasia [1]. The diagnosis is usually made after surgical resection [2]. Surgery is curative only if the lesion is removed in its entirety [3]. Profuse bleeding is often reported during resection of the tumor originated from posterior mediastinum [2, 4]. We here report a case of Castleman's Disease in the posterior mediastinum resected safely by thoracoscopic surgery.

Case Report

A 15-year-old male athletic student was referred to our hospital with an abnormal shadow found on a routine chest X-ray. The patient was asymptomatic and had no remarkable medical history. The results of both physical examination and laboratory investigation were normal. A computed tomography (CT) of the chest showed a well-defined homogenous mass in the left posterior mediastinum. On a chest magnetic resonance imaging (MRI), a mass measuring 2×3×5.8 cm in size was located between T9 and T11 and showed a dense homogenous enhancement (Fig. 1). A preoperative clinical diagnosis of neurogenic tumor was suspected.

The patient underwent total resection of the tumor through thoracoscopic surgery using four 12-mm

instrument ports in order to spare the muscle and chest wall. After general anesthesia, the patient was placed in a right lateral decubitus position. First and second ports were created at the anterior axillary line in the seventh and eighth intercostal space, respectively. Third and fourth ports were created at the posterior axillary line in the seventh and ninth intercostal space, respectively. During thoracoscopy, it was thought that this tumor arose from intercostal nerves. Bleeding increased just after dissection of the parietal pleura surrounding the tumor. Hence, the ninth to eleventh intercostal arteries and veins, which are potential blood supply and drainage vessels of the tumor, were ligated with part of intercostal nerves before removing the tumor, and then the tumor was completely excised with the surrounding soft tissues. The operative time was 175 minutes and the amount of bleeding during surgery was approximately 200 ml. The postoperative course was satisfactory except for the numbness and discomfort in the left anterolateral chest wall, and the patient was discharged on day 4 after operation. Histopathologically, the tumor was composed of lymphoid follicles that contained multiple capillaries surrounded by hyaline sheaths. The microscopic features were characteristic of the hyaline vascular type lesions seen in Castleman's disease (Fig. 2). The postoperative symptoms were almost relieved after 6 months and the patient is free of recurrence at about 5 years after the operation.

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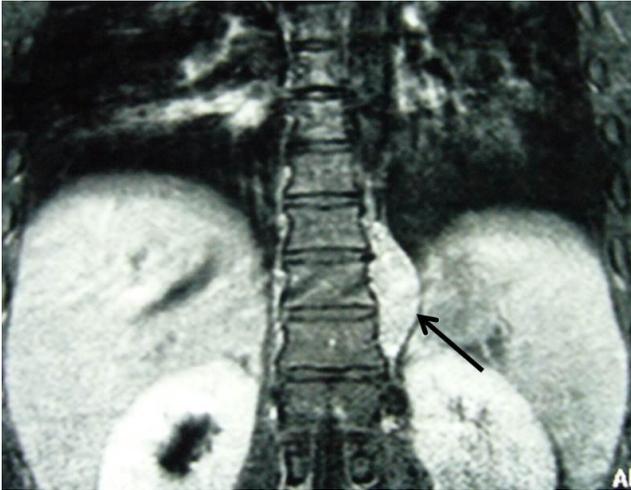


Figure 1 Magnetic resonance imaging (MRI) of chest shows a mass measuring 2×3×5.8 cm in size with dense homogenous enhancement located between T9 and T11 (arrow).

Discussion

More than 90 % of the tumors in the posterior mediastinum is neurogenic tumors although the Castleman's disease is located most commonly in the mediastinum [5]. The findings of chest roentgenogram, CT and MRI of Castleman's disease are not specific of the disease [2]. Even though a percutaneous needle biopsy is performed, it is difficult to make an accurate preoperative diagnosis [2]. Moreover, it has been reported that Castleman's disease in the posterior mediastinum may be the cause of much more profuse bleeding than the disease in the anterior mediastinum due to the tight adhesion and the hypervascularity. Therefore, several authors have reported that endoscopic surgery would not be recommended for Castleman's disease in the posterior mediastinum [2, 4].

Thoracoscopic surgery which is less invasive than a conventional thoracotomy, has so far been performed to treat benign and malignant tumors. In order to perform thoracoscopic surgery safely, it is very important to ensure adequate working space and good visualization. Thus, in our case an additional instrument port (fourth port) was made through which to compress the left diaphragm and ensure enough working space with good visualization. Suction tube was also placed into the left thoracic cavity to drain vapors and obtain clear operative field. CT and/or MRI with enhancement will easily reveal whether the tumor has hypervascularity. It is thought that profuse bleeding will not occur if the supplying arteries and drainage veins are ligated before tumor excision. Angiography may be recommended for hypervascular tumors to identify the blood supply vessels before operation. However, to our knowledge, many surgeons have directly extirpated Castleman's disease in the posterior mediastinum without ligation of the blood supply

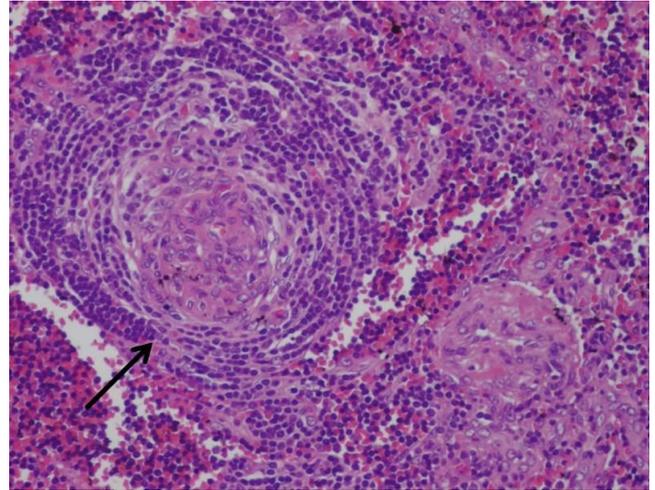


Figure 2 Histopathological view of the tumor shows lymphoid follicles (arrow) containing multiple capillaries surrounded by hyaline sheaths.

vessels. In fact, the clinical diagnosis in our case could not be established preoperatively and bleeding occurred easily with only pleural dissection of the tumor outlines.

Ligation of the blood supply and drainage vessels of the tumor not only sufficiently reduced the bleeding arising from the tumor removal but also facilitated the thoracoscopic surgery procedure successfully. The present case provides the first report that thoracoscopic surgery is technically feasible and can be performed safely and successfully for the treatment of Castleman's disease in the posterior mediastinum.

Conflict of Interest

The authors declare no conflict of interest.

Acknowledgement

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References

1. Castleman B, Towne VW. Case records of the Massachusetts General Hospital. *N Engl J Med* 250:26-30, 1954.
2. Iyoda A, Yusa T, Hiroshima K, Fujisawa T, Ohwada H. Castleman's disease in the posterior mediastinum: report of a case. *Surg Today* 30:473-476, 2000
3. Olcamp G, Weisbrod G, Sanders D, Delarue N, Mustard R. Castleman disease: unusual manifestations of an unusual disorder. *Radiology* 135:43-48, 1980.
4. Erdogan A, Eser I, Ozbilim G. Posterior mediastinal localization of Castleman's disease: report of a case. *Surg Today* 34:772-773, 2004.
5. Duwe BV, Sterman DH, Musani AI. Tumors of the mediastinum. *Chest* 128:2893-2909, 2005.