A Schwannoma in the Middle Mediastinum Originated from the Phrenic Nerve

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Introduction

Neurogenic tumors are one of the major causes of mediastinal masses. Most of those detected in adulthood are benign and diagnosed incidentally [1]. Schwannomas may arise from various neural structures such as sympathetic or parasympathetic chain, intercostal nerves or spinal ganglia. Schwannomas are usually located in the posterior mediastinum. It is very rare for them to be localized in middle mediastinum or arise from the phrenic nerve [1, 2]. We present a case of Schwannoma that originated from the phrenic nerve and treated by videothoroscopic resection.

Case

Our case was a 43 years old female patient that had left-sided chest pain for one month. Her medical history and physical examination did not reveal a special finding. Routine blood, urinary and respiratory tests were within normal limits. Chest X-ray showed a suspicious lesion at the cardiophrenic angle. In thorax CT, a mass measuring 20×25 mm, adjacent to pericardium was detected which had smooth contours and showed no invasion to surrounding tissues (Fig. 1). No endobronchial lesion was observed by fiberoptic bronchoscopy. VATS was performed through two ports under general anesthesia which demonstrated a gray-colored, encapsulated tumor with smooth contours that measured 20×25×25 mm; located at the level of hilum and which was distinct from the parenchyma. There was no

invasion any mediastinal structures. The mass was shown to arise from a slender root of the phrenic nerve. Two endoclips was used for dissection and excision. After the tumor resection an endobag used for extraction of specimen to prevent any tumor dissemination. Tumor was easily dissected and resected. Postoperative histopathologic examination reported a capsulated, fragile mass that measured 25 mm and showed glistening surface but contained cystic structures; which was identified as Schwannoma (Fig. 2). Postoperative chest x-ray showed 3 cm eventration in the left diaphragm. No other significant postoperative complication developed, and patient was discharged at the 3rd postoperative day.

Discussion

Neurogenic tumors constitute approximately 20% of all mediastinal tumors in adults. Majority of these tumors are benign and asymptomatic, thus they are incidentally detected by radiography. Schwannomas are encapsulated tumors with smooth contours that originate from Schwann cells. Schwannomas typically originate from the 7th cranial nerve [3]. In thorax, they are usually localized to posterior mediastinum. They may arise either from the intercostal nerves or spinal nerve roots. However, they may rarely arise from the nerve sheaths that are located in the intrabronchial, parenchymal, middle or anterior mediastinal region [4–6]. Origination from the phrenic nerve is very rare.

Moinuddeen et al. have reported a case of Schwannoma which originated from the phrenic nerve and caused diaphragmatic eventration and destruction of the left lower lobe [1]. In the present case, tumor was very close to phrenic nerve and was originated from a slender branch of

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Fig. 1 Thorax CT scan showing lesion in the left hilum

the phrenic nerve, but it has not caused eventration of the diaphragm.

Transthoracic fine needle aspiration provides valuable information for the diagnosis of Schwannoma; however excision of the tumor is required for definitive diagnosis and treatment. Surgical excision is the method of choice [1, 2, 6]. Excision through thoracotomy is performed according

Fig. 2 Schwannoma, palisading pattern. H.E., x10

to size and localization of the tumor. Videothoroscopic resection is a reasonable alternative to thoracotomy for encapsulated tumors without invasion [2, 3]. McClenathan et al. have reported that a patient with neurogenic tumor originated from intercostal nerves. They performed videothoroscopic excision in this case and concluded that most of smaller tumors can be resected using videothoracoscopy [2]. In a similarly study Ortigara et al. have published a case report. In this case they performed videoassisted thoracoscopic excision in patient with mediastinal schwannoma. They concluded that when compared to thoracotomy, VATS requires smaller incisions thereby resulting in less pain, fewer lung complications, shorter hospital stays, more rapid recovery and less aesthetic damage [3]. Tumor could be easily resected through 2 ports in our case. Postoperative period showed no complication except a moderate eventration of diaphragm and patient was discharged at the 3rd postoperative day.

As for conclusion, we present a case of Schwannoma that originated from the phrenic nerve and localized to middle mediastinum. Although Schwannomas are typical tumors of posterior mediastinum, they should also be kept in mind for the middle mediastinum. Schwannomas are usually benign, slowly expanding, asymptomatic tumors that hardly ever show malignant transformation, but they should be treated by surgical excision. We believe that resection by VATS is a reasonable alternative for the treatment of a small encapsulated tumor without invasion.

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