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Case Report

Posterior Mediastinal and Paravertebral Sulcus and Supra Diaphragmatic Thymoma: Case Report and Literature Review

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Abstract

Background: The incidence of ectopic thymus in the posterior mediastinum is very uncommon and rare. It is difficult to exclude thymoma before surgical procedure. Thymomas generally arise from the thymus in the anterior mediastinum. Ectopic thymomas arising in the posterior mediastinum are extremely rare. We present a case of thymoma which incidentally arising in the left Posterior Mediastinal, paravertebral sulcus and supra diaphragmatic region.

Case: The patient was a 67-years-old woman who underwent an enhanced-computed tomography examination as preoperative staging for renal mass. A 10cm×6cm mass was found incidentally in the left Posterior mediastinum, paravertebral sulcus region over the diaphragm, which mimicking enlarged possibility metastases from renal mass, lymph node or mediastinal mass. The tumor of mediastinum was resected by surgery after removed renal mass via extension of left flank incision in 10th intercostal space through phrenotomy. Postoperative pathological diagnosis of mass was type AB thymoma and diagnosis of kidney mass was angiolipoma. Patient referred to radiotherapy department. The patient was disease-free and without recurrence one year's postoperatively.

Conclusion: When a mass located in the posterior mediastinum, ectopic thymus gland should be included in differential diagnosis. Imaging-techniques as CT-scan or MRI can help the extension of the mass. Ectopic thymus usually has a benign clinical course, if preoperative tissue diagnosis was benign, surgical resection is not recommended.

Keywords: Ectopic Thymus; Mediastinum; Thoracotomy; Angiolipoma of kidney

Introduction

Generally, the thymus gland is located in the superior-anterior portion of the anterior mediastinum and overlying the pericardium and the great vessels at the base of heart [1-3]. The thymus plays a critical role in the development of immune system during early life and its size will decrease and also will become fatty tissue during older age [2,3]. Thymus gland arise from the third and fourth pharyngeal pouches during sixth week of embryologic developmental [1,2]. Thymomas usually originate from the thymus gland in the anterior mediastinum. In generally, when an ectopic thymic tissue is found outside the anterior mediastinum that the most common places are the base of the neck, middle or posterior mediastinum, pulmonary paranchima, and pleura space [1,2]. However, during fetal development, a remnant of thymus is probably detained along the thymopharyngeal duct due to abnormally migration [1,3]. In the most reports, ectopic thymus are in the neck and lower anterior mediastinum [1,3]. In rare instances, the thymus extends from its usual anterior mediastinal position into posterior mediastinum. Less than 20 cases have been reported in English literature [4-6]. Thymic tissue located in the posterior mediastinum may enlarge disproportionally and may compression airway or vascular organs [7,8]. Differential diagnoses of posterior mediastinal masses include, neurogenic tumors, infection mass, hematomas, segmental lung atelectasis, or tumors arisen from bone [4,5]. Preoperative diagnosis of posterior mediastinal thymus usually is very difficult; mostly the correct diagnosis is only made during operation or histological examination [6,7]. Occurrence of ectopic thymoma in the posterior mediastinum is extremely rare [8,7], and clinical presentation is due to compression of the neighboring organs such as esophagus, spinal canal and trachea [1,4,7]. Accessory thymus appears as a solid mass in the posterior mediastinum resembling neurogenic tumors, which comprise 90% of the posterior mediastinal masses in the pediatric age groups [7,8]. We describe here a case of posterior mediastinal mass that was suspected to be a metastases from kidney and proved to be a thymoma AB on histopathology through the thoracotomy in the same stage and through incision of renal surgery in the left flank.

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Case Presentation

The patient was a 67-years-old woman who underwent an enhanced computed tomography examination as preoperative staging for renal mass Contrast-enhanced CT that showed a homogenous enhanced mass with a 10cm×6cm diameter in the left side of posterior mediastinum over diaphragm in the paravertebral sulcus (Figure 1, 2). In CT-scan, mass mimicked a neurogenic tumor, metastases and huge lymph node. The patient had no clinical symptoms in his chest. The medical histories of patients and her family were unremarkable. No abnormalities were found in blood tests. We made a preliminary diagnosis of a malignant tumor, such as a malignant lymphoma or metastatic from renal mass and neurogenic tumor for mediastinal mass which is shown in Figure 3 and Figure 4. The patient underwent surgical resection of the tumor without preoperative biopsy. The patient underwent laparotomy via left flank and partial nephrectomy, and no abdominal LN metastasis was found in the abdomen, with extension of flank incision to the posterior of chest in the 10th intercostal space and phrenotomy, a hard mass was present that it was totally removed. Phrenotomy site was repaired and chest–tube left the place in pleural space and chest wall and abdominal wall was closed. The resected specimen size measurement was 10cm×6cm, and showed a well-encapsulated tumor (Figure 5).

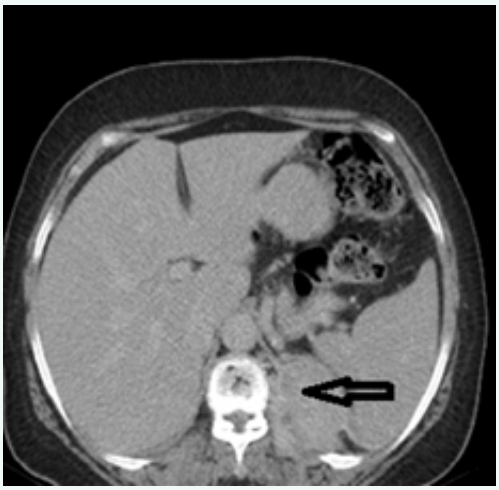

Figure 1 CT-scan of the chest which shows a mass in the left side over diaphragm in the paravertebral sulcus.

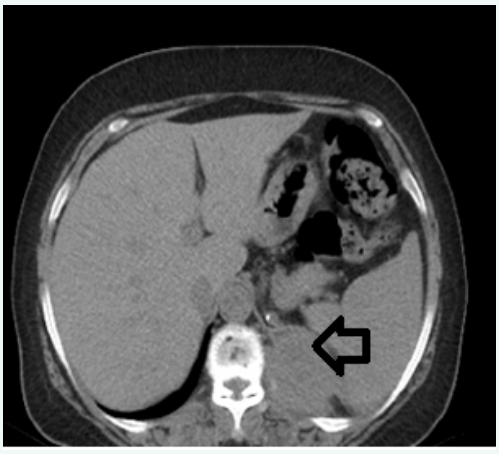

Figure 2 CT-scan of the chest which shows a mass in the left side over diaphragm in the paravertebral sulcus.

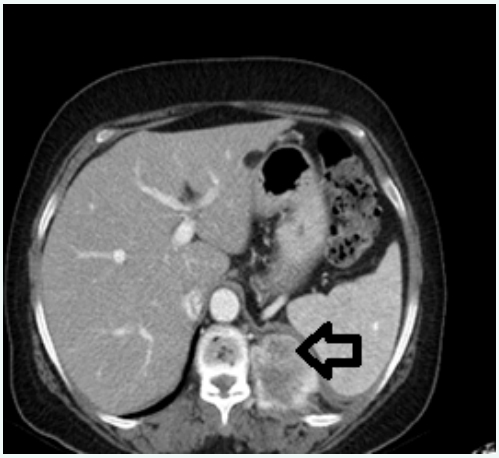

Figure 3 CT-scan of the chest which shows a mass in the left side over diaphragm in the paravertebral sulcus with enhancement.

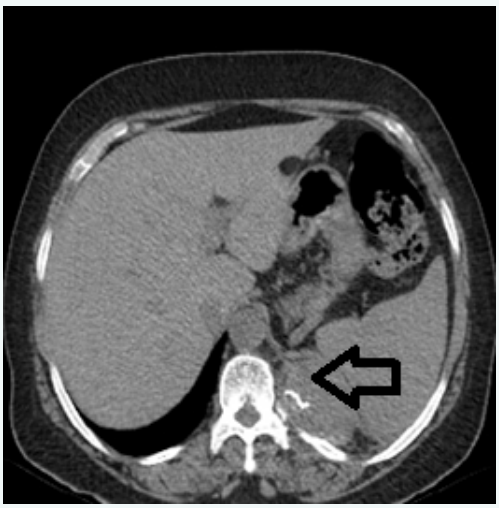

Figure 4 CT-scan of the chest which shows a mass in the left side over diaphragm in the paravertebral sulcus with enhancement.

Microscopic examination showed an encapsulated spindled epithelial neoplasm, arranged in a fascicular pattern with foci of marked lymphoid infiltration. A few mitotic figures were also noted. The tumoral cells focally infiltrate the capsule and surrounding adipose tissue. Immunohistochemical staining showed that the epithelial cells are diffusely positive for epithelial membrane antigen and vimentin and weakly positive for cytokeratin AE1/3 and P63 and negative for neuroendocrine markers, TTF1, S100, SMA, P53 and WT1. The lymphoid cells

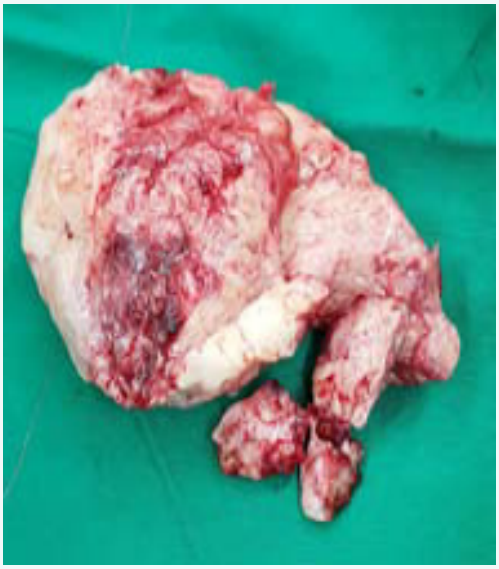

Figure 5 Show specimen after resection with lubolation.

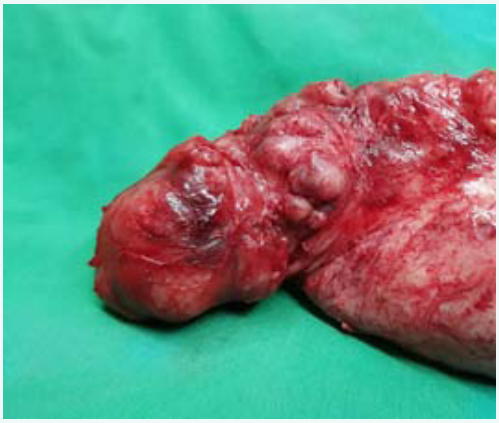

Figure 6 Show specimen after resection with lubolation.

are mostly positive for immature T lymphocyte markers, such as TdT and CD99. These findings were consistent with the World Health Organization (WHO) classification of type AB thymoma. As observed in Figure 6 and Figure 7, stage II is the pathologic staging based on the Masaoka staging system.

Discussion

Thymoma usually arises from thymus gland in the superior anterior mediastinum. Thymomas usually are rare which originated from the thymic gland and are usually located in the anterior mediastinum [1,2]. Ectopic thymomas are rare and include only 4% of all thymic tumor in the anterior mediastinum, and also based on the revive of literature-reports the neck, middle or posterior mediastinum, and the lung and pleura space are the most common places for ectopic thymoma [1]. Ectopic thymoma of middle mediastinal, pleural and hilar adipose tissues are very rare, and ectopic thymoma in the paratracheal region is extremely rare. Only 13 cases of paratracheal region ectopic thymoma were reported in English [2-6,8,10,12]. During embryo logically time, the thymic tissue originated bilaterally from the third and fourth bronchial pouches and migrates into the anterior-superior mediastinum compartment [7-9]. Ectopic thymomas which arise from the distributed ectopic thymic tissue fail to migrate into the anterior-superior mediastinum [8-10]. The ectopic thymic tissue is also present in the retro innominate vein area [11]. Differential diagnoses for paravertebral sulcus masses include LN hyperplasia, lymphoma, metastaLN, sarcoidosis, Castleman and infectious diseases [7,11,17]. Neurogenic tumors and mediastinal goiters may also occur in the middle mediastinum [7-9]. Ultrasound or CT guided needle aspiration biopsy may be useful for diagnosing a paravertebral sulcus tumor. Although the main application of this type of biopsy is mediastinal LN staging for lung cancer, it has been found useful in the diagnosis of other diseases such as sarcoidosis and lymphoma [13-17]. Another report showed successful diagnosis of ectopic thymomas located

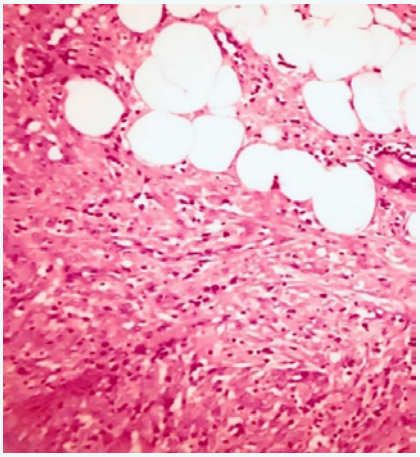

Figure 7 Show pathology of specimen with epithelial neoplasm, infiltrated by lymphoid cells and invading the surrounded fat.

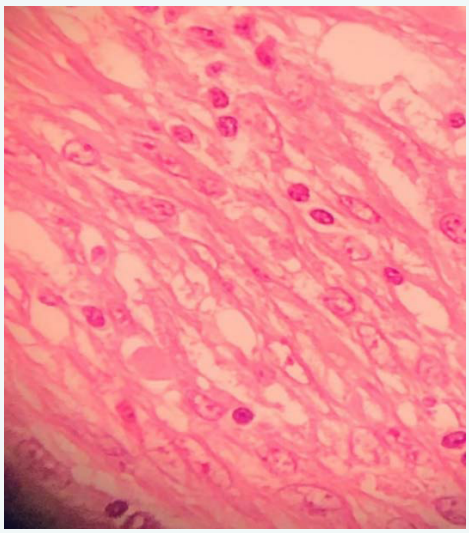

Figure 8 Show pathology of specimen with epithelial neoplasm, infiltrated by lymphoid cells and invading the surrounded fat.

in the right and left paratracheal area in the middle and posterior mediastinum [10,13]. In addition, there are some reports of needle track seeding after biopsy of a thymoma [14,15]. Although ectopic thymoma in the middle and posterior pomediastinum is extremely rare, occult thymoma may be diagnosed as enlarged LNs in the paratracheal region [10,13].

In our case, the pathologist confirmed the presence of the ectopic thymic gland as thymoma in the lower portion of posterior mediastinum during pathological examination, which suggested that the tumor arose from the ectopic thymic tissue in the left paravertebral sulcus. The present cases had no symptoms. Based on WHO classification, the histologic-pathologic type of our case was thymoma. According to the Masaoka staging system, this tumor stage was "Stage I". It is notable that the tumor location was in the left paravertebral sulcus region over the diaphragm.

Surgical procedures for the treatment of ectopic thymomas are not well established [7,9,10]. Thymectomy is the standard surgical procedure for usual anterior and posterior mediastinum thymomas [7-10]. But almost all cases of paratracheal thymoma underwent simple tumor resection, based on a preoperative diagnosis of a benign tumor by imaging examination [7,9,11,12]. Recent reports suggested that simple resection of the tumor, including an adequate surgical margin from the tumor, was acceptable for the treatment of stage I thymoma, with regard to postoperative complications and prognosis [7,16]. It is important that Post-thymectomy myasthenia gravis may occur occasionally after surgery in patients with usual thymomas [6,11]. Therefore, patients should be carefully monitored for MG after surgery [7,8,11,12]. Simple resection of ectopic thymomas may be sufficient as treatment for patients without MG [7,11]. In the present case, however, no significant invasion was found in the adjacent mediastinal structure, Video-assisted thoracoscopic surgery may be considered for resection of posterior mediastinum thymomas [7,11]. En bloc resection of the tumor may be necessary for complete resection [7,9-11]. In our case we did wide and complete resection.

Conclusions

Thymomas are not often considered in the differential diagnosis of posterior mediastinal masses. However, because of the malignant potential and long-term survival of patients after complete resection, we concluded that thymomas should be considered as a differential diagnosis for posterior mediastinal mass. Complete resection should be attempted at the time of the operation for lung survival.

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