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Type A Thymoma with Extensive Necrosis Mimicing Atypical Carcinoid Tumor: A Case Report

Yaygın Nekroz İçeren ve Atipik Karsinoid Tümörü Taklit Eden Tip A Timoma: Olgu Sunumu

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ABSTRACT

Necrosis, infarction, haemorrhage and cystic degeneration in thymoma are described mostly focally. Extensive cystic and necrotic degenerations are reported very rarely. A 38-year-old female patient was admitted to our hospital for right chest pain, cough and dyspnea of 3 months duration. Radiological investigations revealed a mass lesion 7x9 cm in diameter located in the anterior mediastinum without any calcifications, septation or mediastinal extension. During operation, a well encapsulated easily resectable large tumor tissue was observed. Pathological examination was suggestive of Type A thymoma which was challenging as regards the differential diagnosis of spindle cell atypical carcinoid. This rare entity was discussed with a literature survey.

Key Words: Thymoma, Extensive necrosis, Carcinoid tumor

ÖZ

Timomada nekroz, infarkt, hemoraji ve kistik dejenerasyon genellikle fokal olarak tanımlanmıştır. Yaygın kistik ve nekrotik dejenerasyon çok nadiren bildirilmiştir. 38 yaşında kadın hasta kliniğimize 3 aydır devam eden sağ yan ağrısı, öksürük ve dispne yakınmalarıyla başvurdu. Radyolojik olarak anterior mediastende yerleşen, ancak kalsifikasyon, septasyon ve mediastinal yayılım göstermeyen 7x9 cm boyutlu kitle lezyonu tespit edildi. Operasyonda, kapsüllü, kolay rezekte edilebilen geniş tümör dokusu izlendi. Patolojik olarak iğsi hücreli atipik karsinoid ile ayırıcı tanıda karışan tip A timoma tespit edildi. Bu nadir durum literatür eşliğinde tartışıldı.

Anahtar Sözcükler: Timoma, Yaygın nekroz, Karsinoid tümör

INTRODUCTION

Necrosis, infarction, haemorrhage and cystic degeneration in thymoma are described mostly focally (1). These changes can rarely be seen extensively. In this situation, there is a need to make more cross-sections to find a residual area for diagnosis. At that time, the lesion has to be differentiated from multilocular thymic cyst, thymic basaloid carcinoma, mucoepidermoid carcinoma, and germ cell tumors like seminoma or yolk sac tumor (1-3). Spindle cell atypical carcinoid tumor is not discussed as a differential diagnosis in the literature.

CASE REPORT

A 38-year-old female patient was admitted to our hospital for right chest pain, cough and dyspnea of 3 months duration with recent exacerbation. There was no history of sputum expectoration, fever, hoarseness, dysphagia or weight loss. Physical examination and vital signs were in normal limits. Respiratory system examination and other system examinations were unremarkable. The chest X-ray (CXR) showed mediastinal enlargement. Computed tomography (CT) of the thorax revealed a mass lesion that was 7x9 cm in diameter located in the anterior mediastinum and represented with hyperdense area without any calcifications, septation or mediastinal extension (Figure 1). Complete blood count, serum electrolytes, and liver enzymes were within normal limits. Tumor marker studies were as follows; β-HCG <0.5 (0-5 mIU/ml), AFP: 2.9 (0-10 IU/ml), CA 19-9 <1.0 (0-37 U/ml), CA 125: 109.3 (0-35 U/ml), and CA 15-3: 23.1 (5.7-40 U/ml). Surgical mass excision was performed via median sternotomy. During surgery, a well encapsulated, easy resectable large tumor tissue without invasion to the surrounding structures was observed. There was no significant complication during the postoperative period. Because of the complete resection of

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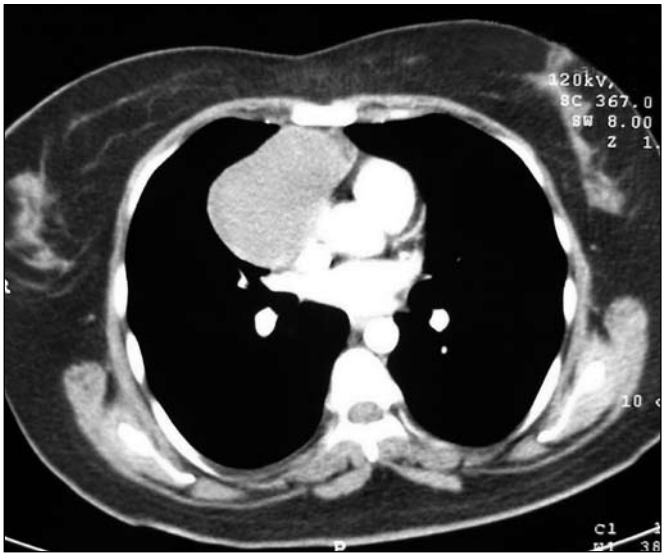

Figure 1: Thorax CT showing mass lesion 7x9 cm in diameter located in the anterior mediastinum

tumor and noninvasive (stage I) disease, the patient did not receive adjuvant radiotherapy. Within the one-year follow-up period of surgery, the patient was asymptomatic and no relapse was seen on CXR.

Macroscopically, creamy-brown-yellowish colored encapsulated specimen with a smooth surface was received measuring 9x7.5x6 cm in size with attached fibrofatty tissue. On cut section a tumor mass was seen 7.5x5.5 cm in diameter with extensive necrosis, infarctions, haemorrhagic and cystic degenerations and encapsulated with a fine capsule measuring 0.3 cm in width.

Microscopically, sections from restricted areas within the extensive necrosis, infarctions, cystic and haemorrhagic changes, the tumor cells were spindle and/or oval-shaped with bland nuclei, dispersed chromatin and inconspicuous nucleoli; they were arranged in a storiform pattern or prominent rosettes without a central lumen (Figure 2A). The tumor had no lymphocytes and showed neither distinct lobules nor dissecting fibrous bands as seen in other types of thymoma. The epithelial component within the necrotic areas or in the viable areas did not show any evidence of atypia or mitotic activity. Vaso-occlusive and thombotic phenomena were present (Figure 2B). There was significant neuroendocrine morphology as well as evident rosette formation without a central lumen. Therefore, differential diagnosis was made among type A thymoma and thymic spindle cell atypical carcinoid tumor. For the purpose of differential diagnosis, immunohistochemical studies with neuroendocrine markers were used. Neuroendocrine differentiation was not seen in this study. The tumor stained positively with pan-cytokeratin, but NSE, CD56, chromogranine, synaptophysin, S-100 protein, CD5, vimentin, CD99, CD34, AFP, HCG, PLAP, calretinin stain were all negative. A diagnosis of benign type A spindle cell thymoma with extensive cystic and necrotic degenerations was made.

DISCUSSION

Thymomas are classified as Type A (spindle cell/medullary), Type AB (mixed), Type B1 (lymphocyte-rich), Type B2 (cortical), Type B3 (epithelial) and Type C (thymic carcinoma) according to histological criteria of World Health Organization (WHO) classification. Type A thymoma accounts for 4-19% of all thymomas. The most important prognostic factors in thymoma are histological

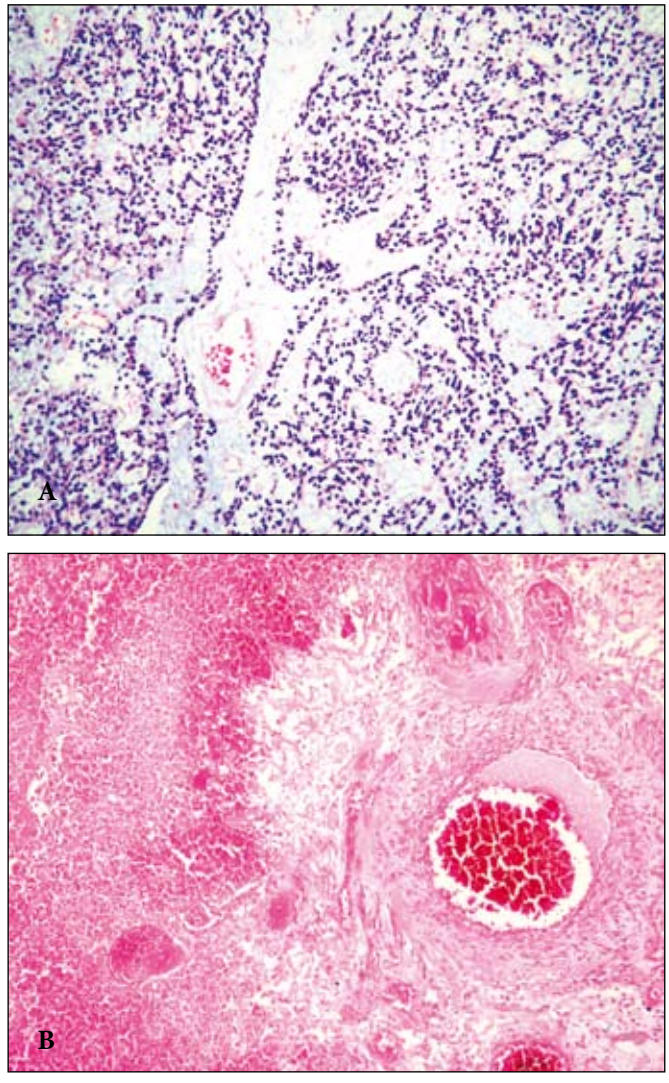

Figure 2: A) Light microscopy showing type A thymoma mimicking thymic carcinoid tumor with rosette formation, **B)** vaso-occlusive and thrombotic phenomena (H&E, x200).

type, tumor stage and completeness of surgical resection (4,5). Type A thymoma is generally regarded as a benign tumor without having a risk of recurrrence if the tumor can be completely removed surgically. Overall survival of stage I type A thymoma patients at 5 and 10 years has been reported to reach 100%. Although stage I and II thymomas are considered as none or very low malignant potential, stage III type A thymomas are considered to have low malignant potential (4).

Thymoma showing extensive necrosis is described as an extremely rare condition that remains challenging for the pathologist (2). Focal cystic changes in thymoma are described in only 40% of the cases (6,7). Extensive cystic and necrotic degenerations are seen very rarely (7). The differential diagnosis of cystic and necrotic lesions of thymus includes multilocular thymic cyst, thymic basaloid carcinoma, thymic mucoepidermoid carcinoma, thymic germ cell tumors (seminoma, yolk sac tumor) and Hodgkin's disease (1).

In this paper, challenges in differential diagnosis between spindle cell atypical carcinoid and thymoma were discussed. Spindle cell carcinoid tumor is macroscopically well circumscribed but usually not encapsulated. Microscopically, it has finely granular chromatin pattern and neuroendocrine features. In case of diagnosis of carcinoid tumor, at least two positive neuroendocrine markers and more than 50% of tumor cells stained with pan-cytokeratin must be present (8). Ultrastructural analysis via electron microscopy is important in differential diagnosis as well, but we could not perform electron microscopic evaluation because of absence of electron microscope in our center. Immunohistochemical analyses with CD56, chromogranin, NSE and synaptophysin were negative in this case.

In our case, there was extensive necrosis beside the absence of mitosis. Typical carcinoid justifies a diagnosis of atypical carcinoid even when a small punctate area of necrosis is present so that we needed to differentiate type A thymoma from thymic atypical carcinoid tumor (4). In this case, macroscopic examination is the clue to correct diagnosis. While thymic atypical carcinoids are well circumscribed but not encapsulated, type A thymoma is usually well circumscribed and encapsulated. Furthermore, easy resection and the absence of invasion to adjacent organs frequently support the diagnosis of type A thymoma. Moreover, the presence of bland nuclear feature of the tumor cells and the absence or seldom presence of mitosis in microscopic examination are suggestive of the diagnosis of type A thymoma.

The presence of necrosis, infarction, haemorrhage and cystic degenerations was initially discussed by Moran et al. comprehensively (1). Moran et al. reported that presence of necrosis infarction and haemorrhage were along with benign behavior in thymoma while the presence in other organs associated with malignancy and aggressive behavior.

Moran et al. emphasized that the areas of infarction showed features of ischemic necrosis and were always intimately associated with vaso-occlusive and thrombotic phenomena and with cystic and hyperplastic changes of adjacent thymic epithelium (1). Hori et al. (9) reported spontaneous regression of thymoma from 35 mm to 15 mm in diameter because of coagulation necrosis due to the occluded main arteriole of tumor by organized thrombi. In our case, vaso-occlusive and thombotic phenomena were also marked.

As a result, extensive necrosis, infraction, cystic and haemorrhagic changes in thymoma were so rarely reported. For accurate diagnosis, there is a need to take multiple sections from restricted areas within the extensive necrosis. Immunohistochemical and ultrastructural studies are required with meticulous gross and microscopic examination.

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