Case report - Thoracic oncologic

Recurrent dedifferentiated liposarcoma of mediastinum involving lung and pleura

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Abstract

We report a case of primary recurrent mediastinal dedifferentiated liposarcoma with unusual long-term survival. A woman who complained of dyspnea showed on imaging features a bulky posterior mediastinal mass which was completely excised and initially misdiagnosed as an angiomyolipoma. She recurred 15 months later and histological examination showed a dedifferentiated liposarcoma. Resection was incomplete and the patient received adjuvant therapy. Eight years later, a second recurrence occurred in the right pleura and lung. The patient died three months later.

Keywords: Sarcoma; Mediastinal tumor; Molecular biology

1. Introduction

Primary mediastinal liposarcoma constitutes <1% of all malignancies and >9% of primary sarcomas of the mediastinum. We report a rare case of primary posterior mediastinal dedifferentiated liposarcoma with long-term survival and discuss it with previously reported cases in the literature.

2. Case report

A 34-year-old Ukrainian woman was referred to our hospital nine years ago for an increasing dyspnea. Imaging features revealed a bulky posterior mediastinal mass. A gross total resection was performed by thoracotomy. The tumor weighed 1029 g and measured 20 cm.

Histological diagnosis was an angiomyolipoma (Fig. 1) with mature adipose tissue and abundant vascularization. Fifteen months later, a mediastinal recurrence occurred, revealed by an acute dyspnea, and a compressive tumor was resected. The diagnosis of primary dedifferentiated liposarcoma was performed based on an abrupt transition between welldifferentiated liposarcoma (DLPS) and fibroblastic spindle cells with mild nuclear atypia, often organized in a fascicular pattern, corresponding to areas of dedifferentiated or intermediate grade liposarcoma. The patient received adjuvant radiotherapy (60 Gy) and chemotherapy (6 cycles with Doxorubicine, Dacarbazine, Ifosfamide). Eight years later, she presented with cough and general health deterioration. Imaging features showed a large unresectable mediastinal tumor involving the right pleura and lung associated with a significant hemothorax. Tumor biopsy was performed and revealed a dedifferentiated liposarcoma. Immunohistochemistry using MDM2 and CDK4 (Fig. 1) showed a nuclear staining of tumor cells with both antibodies, consistent with overexpression of MDM2 and CDK4 proteins in the first tumor and the two recurrences. FISH analysis showed amplification of MDM2/CDK4 genes in 12q 14–15 region. The patient died three months after the second recurrence.

3. Discussion

There are three subtypes of liposarcomas: well differentiated/dedifferentiated, myxoid/round cell and pleomorphic liposarcoma. Dedifferentiation occurs in up to 10% of DLPS. The retroperitoneum represents the most frequent location, followed by the soft tissue of the extremities. Occurrence in the mediastinum is extremely rare [1]. DLPS usually presents as a large painless mass which may be asymptomatic or symptomatic with compression of mediastinal structures. Common presenting symptoms include dyspnea, wheezing, cough, chest pain and weight loss. Chest radiography showed a widened mediastinum.

On CT-scan and MR imaging, liposarcomas appear as inhomogeneous fatty masses. More solid components may be present and enhance with contrast material injection. Surrounding structures may be infiltrated or displaced [2]. Gross examination of DLPS shows a multinodular yellow mass with solid tan-gray areas with frequent necrosis. The
histological hallmark of DLPS is represented by the coexistence of DLPS and cellular sarcoma areas, which may exhibit heterologous differentiation in approximately 5–10% of cases [1]. As it is sometimes difficult to distinguish areas of DLPS from areas of normal adipose tissue infiltrated by a cellular sarcoma, immunohistochemical and/or molecular analysis may be used to confirm the diagnosis, respectively to show surexpression of the proteins or amplification of the CDK4 and MDM2 genes [3].

Hirai et al. reviewed the Japanese literature for 15 surgical cases of primary liposarcoma of the mediastinum and showed that mean age was 56 years and mean maximum size was 14.7 cm. Furthermore, liposarcomas arise in all mediastinal compartments, most commonly in the anterior and posterior ones [4] as in our case.

DLPS appears to exhibit less aggressive clinical behavior when compared with other high-grade pleomorphic sarcomas, with a tendency to recur locally in at least 40% of cases [1], and to invade adjacent organs as in our case. Metastatic spread is extremely rare [5]. Hahn and Fletcher argue that primary mediastinal liposarcomas appear to be similar in clinicopathologic terms to liposarcomas arising in the retroperitoneum [5].

The best treatment for mediastinal DLPS should be complete surgical resection. Radiotherapy and chemotherapy are usually used in association and are believed to be ineffective therapeutic modalities for survival [4]. Furthermore, tissue adhesion caused by radiotherapy might make it difficult to remove when local recurrence occurs. However, doxorubicin seems to be the single most active agent, and improved response rate is evident when this drug is combined with other agents [6].

Prognosis of mediastinal liposarcomas depends both on the quality of resection (total resection is difficult to obtain in such location, particularly if the tumor is well differentiated and looks like normal adipose tissue) and the grade of malignancy. Kiyama et al. also reviewed 21 cases of mediastinal liposarcoma and reported that the overall five-year survival rate was 38.1% in patients with DLPS (which are low-grade tumors), and none of the patients with other histological subtype were alive in the mean interval [7]. In the review of Hirai et al. there was only one case of DLPS and the patient was free of disease 14 months after surgery [4]. The case we reported is exceptional because of the long-term survival and highlights the local prognosis of such sarcoma, as described in retroperitoneum [8].

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References