Liposarcoma of the Posterior Mediastinum in a Child*

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Liposarcoma is rare in children and rarely occurs in the posterior mediastinum in any age group. A massive intrathoracic tumor in a 17-year-old young man was a diagnostic dilemma; preoperative radiographic evaluation and biopsy led us to believe it was a teratoma. At operation, a poorly differentiated myxoid liposarcoma originating from the posterior mediastinum was found and excised. To our knowledge, this is the first liposarcoma of the posterior mediastinum reported in a patient less than 18 years old. (Chest 1994; 106:1288-89)

The following case demonstrates a rare occurrence of liposarcoma in a 17-year-old man.

CASE REPORT

A 17-year-old man presented to the emergency room with complaints of right-sided chest pain and shortness of breath for 1 month. He had no history of tobacco, alcohol, or drug use, and had no known contact with an active tuberculosis patient. On physical examination, the right side of the thorax was enlarged; markedly decreased breath sounds and dullness to percussion were noted on the right side of the chest. A chest x-ray film showed complete opacification of the right hemithorax with mediastinal shift to the left. (Fig 1). A computed tomography (CT) scan showed a huge mass involving the entire right hemithorax and the mediastinum, with elements of varying soft tissue densities and dense central calcification (Fig 2). A CT scan of the abdomen and pelvis did not disclose any abnormalities. The tumor was hypovascular as evidenced by arteriography, and displaced, but did not involve the esophagus as shown by barium swallow. Bronchoscopy showed extrinsic compression of the right mainstem bronchus, but no endobronchial lesions. Transbronchial biopsy and bronchial washing did not show malignant cells, granulomas or acid-fast bacilli, or fungi. A CT-guided fine needle biopsy and large core needle biopsy showed only striated muscle and mature adipose tissue on histologic examination. Serum alpha-fetoprotein and chorionic gonadotropin levels were not elevated.

The preoperative diagnosis of teratoma of the posterior mediastinum was made, and the patient underwent exploration via a right thoracoabdominal incision. A myxoid liposarcoma (90X14X14 cm) arising from the inferior aspect of the posterior mediastinum was found. Despite complete excision of the tumor and exenteration of all nonvital tissue from the posterior mediastinum, a microscopically clear margin could not be obtained. Postoperatively, the patient received three cycles of chemotherapy (doxorubicin, 20 mg/day for 3 days; dacarbazine (DTIC) 450 mg/day for 3 days; ifosfamide and mesna 2,400 mg/day for 5 days). Despite these efforts, the patient died of recurrent tumor 9 months afterward.

DISCUSSION

While liposarcoma is a relatively common soft tissue neoplasm in adults, it rarely occurs in young people. Of 2,500 cases coded as liposarcoma at the Armed Forces Institute of Pathology, only 17 (0.7 percent) occurred in those
under the age of 16 years, and none of these occurred in the thorax. Regardless of age, liposarcomas rarely occur in the mediastinum, comprising only 0.15 percent of all mediastinal tumors in a series of 7,129 patients. In a report from the Armed Forces Institute of Pathology, only 29 of 1,067 (2.7 percent) liposarcomas occurred in the thorax. Our review of the literature showed only 4 case reports of mediastinal liposarcomas in patients less than 18 years of age, none of which occurred in the posterior mediastinum (Table 1). All of these cases involved the myxoid cell type, and three patients followed up longer than eight months had a local recurrence. While the myxoid cell type is the most common type of liposarcoma in adults comprising 40 to 60 percent of cases, this cell type appears to account for a larger percentage in children, reaching 76 percent in one series.

In the present case, the heterogeneous nature of the tumor made preoperative diagnosis difficult. The calcification and the marked radiographic heterogeneity of the soft tissues, as well as the inability to identify malignant tissue despite multiple biopsies led us to believe the mass was a teratoma arising from the posterior mediastinum. Usually liposarcomas have a homogeneous soft tissue appearance on a CT scan, but well-differentiated portions can be radiolucent and poorly differentiated portions can be more radiodense. Areas of well-differentiated liposarcomas also can show calcification and ossification, especially in the myxoid cell type.

Liposarcomas tend to recur, especially in the retroperitoneum; recurrence rates in this area are over 50 percent. This may be due to the difficulty in obtaining a complete resection with negative microscopic margins. The same difficulties apply to a posterior mediastinal liposarcoma.

![Figure 2. A CT scan of the chest showing a massive tumor occupying the entire right hemithorax with marked mediastinal shift to the left. The tumor has varying degrees of soft tissue densities as well as areas of calcification.](image)

![Figure 3. Photomicrograph of a section of tumor shows malignant lipoblasts.](image)

For these reasons, systemic chemotherapy should be given after resection. Doxorubicin is the single most active agent with a response rate of 15 to 30 percent, and improved response rates are evident when doxorubicin is combined with other agents. The role of adjuvant radiotherapy for mediastinal liposarcomas is not definite, but should be considered.

In conclusion, liposarcomas of the posterior mediastinum are rare, and are exceedingly rare in the pediatric age group. Principles of treatment are based on the treatment of retroperitoneal liposarcomas and include complete resection, systemic chemotherapy with doxorubicin, and consideration of adjuvant radiotherapy. Despite multimodality therapy, high-grade liposarcomas of the mediastinum recur in the majority of patients.

### REFERENCES


### Table 1—Review of Literature for Mediastinal Liposarcoma

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<th>Year</th>
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