Sympathicoblastoma of the Anterior Mediastinum
Report of a Case
HAROLD A. OBERMAN, CAPTAIN, MC, U.S.A.*
Washington, D. C.

There are only rare reports of nerve sheath tumors presenting in the anterior mediastinum, and even fewer of tumors of the sympathetic nervous system in such a location. Consequently, the anterior mediastinal sympatheticoblastoma described below is of particular interest. Neurrogenous neoplasms frequently arise in the mediastinum; however, they are almost always situated in the posterior compartment. Usually they occur in the paravertebral area, although nerve sheath tumors may evolve from intercostal nerves in the chest wall.

The primitive neoplasms of the sympathetic nervous system are often collectively designated as neuroblastomas; however, for reasons set forth in a prior publication, it is preferred to subdivide them into sympathicogoniomas and sympathicoblastomas. The sympathicogonioma is the least differentiated neoplasm, being composed of cells approximating the size of lymphocytes, with dark hyperchromatic nuclei and indistinct cytoplasm. The sympathicoblastoma possesses somewhat greater differentiation; the cells are larger than sympathogonia, have a thin rim of cytoplasm, and are surrounded by fibrillar stroma. Although pseudorosettes may be seen in both, they are more common in the sympathicogonioma.

Case Report
This ten-month-old white boy was admitted to Walter Reed General Hospital on October 31, 1959, for investigation of a mediastinal mass. One week prior to hospitalization, he was seen by his local physician because of irritability, rhinorrhea and cough. He was believed to have pneumonitis and was treated with penicillin.

Roentgenograms of the chest at that time revealed the mediastinal mass. Since the age of three months, the child had had frequent upper respiratory infections. However, he had gained weight normally, and had no serious illnesses until at eight months of age he had the onset of severe diarrhea. This lasted two weeks, after which time it was only intermittently present.

Physical examination revealed a well-developed, well-nourished boy in no respiratory distress. The left upper anterior thorax was protuberant, and there were decreased breath sounds and dullness to percussion over this area. Auscultatory findings were essentially normal over the remainder of the chest. Cardiac percussion dullness was shifted to the right and no murmur was heard. The liver edge was felt 4 cm. beneath the right costal margin. The spleen was not palpable and no abdominal mass was discerned. The remainder of the physical examination was within normal limits.

Examination of the blood revealed a hemoglobin of 11 gm. per 100 ml. and a white blood cell count of 7,900. The urine gave negative tests for sugar and protein. Repeat examinations during the hospital course were essentially unchanged, with the exception of a postoperative hemoglobin of 8.7 gm. per 100 ml.

Admission roentgenograms revealed a large superior mediastinal mass extending to the left of the midline and occupying an anterolateral position. Esophagus and trachea were deviated to the right and posteriorly. Barium swallow further defined the esophageal deviation.

Left thoracotomy on November 7 revealed a large tumor in the location of the thymus, lying on the anterior surface of the great vessels. It was apparently encapsulated and enveloped the left vagus, phrenic, and recurrent laryngeal nerves, and the left subclavian artery. The latter structures were necessarily partially sacrificed during the dissection, and the neoplasm was extirpated from its anterior mediastinal position. However, a small portion of the tumor that protruded through the thoracic inlet and was intimately related to the brachial plexus could not be excised. A pleural tent was placed over the superior aspect of the chest. Postoperatively, left Horner’s syndrome, elevation of the left hemidiaphragm, weakness of the voice, and absence of the left radial pulse were present, due to the transection of the aforementioned artery and nerves.
Pathologic findings: The neoplasm weighed 150 gm. and was partially covered by a thin, gray, fibrous membrane. Sectioning revealed soft, friable, gray-brown tissue with numerous foci of hemorrhage and necrosis. Calcification was not grossly evident. Microscopically, the neoplasm was composed of cells having oval to round nuclei, with dense nuclear chromatin and indistinct nucleoli. A small amount of eosinophilic cytoplasm was present. There was moderate variation in cell size and pleomorphism was present; however, mitotic figures were extremely rare. These cells were surrounded by a fibrillar, eosinophilic, glia-like stroma, and the neoplasm was partitioned by septa of vascular connective tissue. An occasional small focus of calcification was seen, as were widely-scattered pseudorosettes. The histologic findings were typical of a sympathicoblastoma.

Between November 19, 1959, and January 17, 1960, he was given 3,150 r to the mediastinum and 3,060 r to the left supraclavicular area. He tolerated the radiation therapy well and was discharged from the hospital.

When contacted on May 21, 1962, the boy’s parents reported that he was asymptomatic and leading a normal life. He had had no recurrences of neoplasm.

DISCUSSION

This report, together with those of Sabiston and Scott,1 Mandeville,3 and Wahl and Robinson,4 represents a unique example of
a neuroblastoma presenting in the anterior mediastinum. The rarity of this occurrence is emphasized by the absence of such localization of sympathetic nervous system tumors in the large series of mediastinal neurogenous neoplasms reported by Carey, et al.,1 Oberman and Abell,1 and Ackerman and Taylor.4 Similarly, anterior mediastinal presentation was absent in the detailed reviews of neuroblastosmas by Gross, et al.,7 and by Horn, et al.4 This is undoubtedly related to the paucity of ganglionic tissue in this area.

Only scattered reports of other neurogenous neoplasms in the anterior mediastinum have appeared in the medical literature. These include ganglieneuromas, reported by D’Abreu,9 and by Kent, et al.10 and nerve sheath tumors, such as those reported by Ackerman and Taylor8 and by Tebow and Brown.11

Of further interest is the apparent cure of this incompletely excised neoplasm. This may be related to the level of histologic differentiation. In a previous study of mediastinal neurogenous neoplasms, sympathicoblastomas pursued a less malignant clinical course than sympathicogoniomas.1 Horn, Koop, and Kiesewetter5 also found this to be true in their study of neuroblastosmas.

The history of diarrhea in this patient is of uncertain significance. Prior reports have cited persistent diarrhea associated with neuroblastosmas,11 however, this boy’s diarrhea was intermittent, and not of major significance when the mediastinal mass was detected.

The site of origin of the neoplasm in this report can only be surmised. It might possibly have arisen in ganglionic tissue overlying the heart. Another possibility is that of origin in a cervical sympathetic ganglion with downward extension into the anterior mediastinum. Were this a metastasis from a primary adrenal neuroblastoma, it seems highly improbable that the latter would not have become clinically evident during the 30-month interval since thoracotomy.

REFERENCES