Neurilemmoma of Rib
Report of a Case*
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Benign, encapsulated neurilemmomas (schwannomas) may arise from sheaths of peripheral, cranial, or sympathetic nerves. They occur frequently in association with neurofibromatosis, when they may be multiple. Microscopically, the closely packed spindle-shaped cells may be aligned in rows giving rise to a palisading appearance. In other fields, cells may be loosely and haphazardly arranged and microcysts may be seen.

Neurilemmoma in bone is uncommon. One of us (Dahlin), in a review of 2,276 cases of bone tumor, found only one, a tumor in the mandible. Since then, three cases have been added to the Mayo Clinic series: two tumors were in the mandible and one was in the right third rib. (This last case forms the basis for this report.) Malignant neurogenic tumors of bone are even more uncommon than the benign type. None has been recognized in the Mayo Clinic series. In 1959, Lichtenstein stated that there had been no comprehensive description of malignant schwannomas in bone.

In 1960, Samter and associates were able to find reports of 12 cases of neurofibroma of bone in the literature and to add three cases of their own. Since then, four more cases have been reported, in one of which there were associated anemia and prolonged bleeding and coagulation times. At the time of writing, the present case appears to be the twentieth published case of neurofibroma of bone. Certain diagnostic aspects of this case are of interest.

![Figure 1A: Roentgenogram of an essentially normal chest with ill-defined cystic lesion faintly visible in region of right third rib. Figure 1B: Tomograms of anterior end of right third rib showing cystic lesion in rib.](image-url)
CASE REPORT

In April, 1961, a 43-year-old white industrial executive was seen for the first time at the Mayo Clinic. He had been referred to the clinic for resection of a cystic lesion thought to be in the upper part of the right lung. The lesion had been discovered two months previously on a roentgenogram of the chest taken during the course of a physical examination.

The patient gave a long history of a chronic cough productive of thick mucoid sputum. The cough was partially relieved when he discontinued smoking his habitual 40 cigarettes per day. Because of malaise and the loss of 30 pounds in the preceding 18 months, both of which he attributed to dieting, the patient was seen elsewhere by a thoracic surgeon who advised thoracotomy and resection of the lesion. Bronchograms of the right lung gave negative results and the patient was referred to the Mayo Clinic for further evaluation of his problem.

A general physical examination revealed nothing remarkable except for a fungus infection of the fingernails and feet. Review of a single posteroanterior roentgenogram of the chest, which he brought with him, confirmed the presence of an ill-defined, cystlike lesion apparently in the upper region of the right lung. Bronchograms in his possession were interpreted as being within normal limits.

A hemoglobin concentration, erythrocyte sedimentation rate, total and differential leukocyte counts, and the result of urinalysis were all within normal limits. Stereoscopic posteroanterior roentgenographic views of the chest were obtained, and the round shadow that was under suspicion was found to represent a small cyst in the anterior end of the right third rib. Tomograms confirmed this diagnosis (Fig. 1). It was explained to the patient that this lesion of the rib was almost certainly benign and that nothing was required other than follow-up examinations. However, he wished to have the lesion removed, and on April 4, 1961, the anterior portion of the right third rib was resected.

The specimen contained a 0.9 by 0.8 by 0.5 cm. neurilemmoma within the medullary cavity (Fig. 2). The microscopic features of the tumor are shown in Figures 3 and 4.

The patient’s recovery was uneventful, and he was dismissed on the sixth postoperative day. When he returned for examination a year later, no evidence of recurrence was found.

COMMENT

It was thought elsewhere that the cystic lesion was in the substance of the lung, and this diagnosis would have been difficult to disprove without stereoscopic roentgenograms of the chest. The usefulness of stereoscopy was again demonstrated by making thoracotomy unnecessary.

Although neurilemmomas of bone reportedly have arisen from various bones, the mandible and sacrum have been the more frequent sites. As far as can be ascertained, the present case is the first of a neurilemmoma in the rib to be reported. A case reported by Grinkel leaves some doubt as to whether the tumor arose from the bone and not from an intercostal nerve. Most tumors that were previously reported
on have been associated with symptoms, usually either swelling or pain or both.

In a recent review of cases in which skeletal lesions occurred in patients with neurofibromatosis, Hunt and Pugh* noted that among the commonest locations for erosive defects from nerve tumors were ribs. Intercostal neuromas may erode one or more ribs, usually on the undersurface, to produce notching similar to that seen in coarctation of the aorta. These same authors were unable to find any patients with cystic lesions intrinsic to bone, and they thought that such cysts should be deleted from the list of characteristic skeletal lesions of this disease. In the present case, no evidence of neurofibromatosis could be found. No connections between intrasosseous nerves and tumors in bone have been demonstrated, but it has been presumed that these tumors arise from small nerves accompanying nutrient vessels.

AORTIC VALVE REPLACEMENTS

Various types of prosthetic materials were evaluated in survival experiments with dogs. The autogenous pericardial leaflet best simulates the normal leaflet in function, but it collects fibrin and undergoes degenerative changes that result in contraction and insufficiency. Porous plastics are the most apt to collect fibrin in deposits: this causes the leaflet to become rigid, fixed and often calcified. Solid plastic cusps, while they did not collect fibrin on the plastic portion of the leaflet, did collect it at the junction of the leaflet with the surrounding endocardium.

These cusps lacked the durability required for long-term survival. The combination of a porous plastic for durability with a cover of solid plastic to prevent the collection of fibrin deposits appears to meet the material requirements for a satisfactory prosthetic aortic valve leaflet.

References


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