17. Chest Wall Tumors

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Introduction

The skin and each of the connective tissues of the chest wall may develop malignant disease, each appropriate to the particular tissue. Treatment is as for any other area, and it is only when surgical management results in a defect or impairment of the mechanics of the chest wall that this becomes a specialist chest problem. The tumors that particularly involve the thoracic surgeon are, therefore, primary growths of the ribs and sternum.

The majority of primary tumors of the chest wall fall into the classification of chondroma or chondrosarcoma. Tumors involving the sternum are almost without exception malignant. Those of the ribs often recur if locally excised and many, in time, behave as malignant tumors with invasion and pleural seeding. Histological diagnosis may be very difficult, and even among experts there may be differences of opinion. Osteogenic sarcoma of the chest wall is extraordinarily rare, and there are a number of other primary tumors, similarly uncommon, that have been reported.

Presenting Symptoms and Signs

The usual presentation is of a palpable lump, hard and painless or slightly tender. If it is hot, the possibility of an infected lesion should be considered. A hot, pulsatile swelling over the sternum may be due to a mycotic or luetic aneurysm, and this possibility should be remembered before ill-considered attempts at biopsy. Alternatively, thyroid or renal secondary tumors can present in this way.

Lytic lesions are usually secondaries, those in breast and bronchus being two of the commonest types. They are usually recognized on roentgenography but may present as pathological fractures. Solitary plasmacytoma of the sternum or rib has been reported.
Investigation

Routine chest roentgenograms may not be particularly helpful in the assessment of chest wall tumors. Tomograms and oblique views of the ribs are usually necessary, and should be planned in discussion with the radiologist. CT scanning is helpful, but not necessary for management.

Surgical Management

Chondrosarcoma of the chest wall should be surgically removed whenever feasible because the response to radiotherapy and chemotherapy is poor, and the tumors have a relentless pattern of locally invasive growth. The practical points apply, in general, to the management of other chest wall tumors.

The first issue is whether preoperative tissue diagnosis will help in the management. As stated above, histological classification may be difficult, and the separation of benign from malignant lesions is not always easy. If resection is practicable and seen as the best way of dealing with the tumor, then it is best to resort to excision biopsy in the first instance, knowing that local removal of apparently benign chondromata is associated with a high incidence of recurrence. This avoids the anxiety about seeding into a biopsy incision or needle track and the surgical problem of knowing how to deal with a less than ideally sited biopsy incision, when the definitive operation is being performed.

Nevertheless, chest wall resection for tumor may be very extensive, and under many circumstances the patient and surgeon would prefer to have histological confirmation of some sort before proceeding.

In planning surgical resection, local recurrence is the problem which has to be anticipated. It appears that the tumor may spread in the bone marrow, periosteum, or tissue planes, and the principle is that the whole of the rib (or ribs) involved and the healthy ribs above and/or below should be resected for a length well clear of the width of the tumor.

The Incision

It is best to place the incision so that it does not overlie the defect in the chest wall. Thought must also be given to the possible need to extend the incision for added access, how muscles may be spared, and finally, how the wound is to be closed. Use of flaps for closure is worth considering and planning for.