Management of Primary Chest Wall Tumors: 14 Years' Clinical Experience

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Background: Primary chest wall tumor is rare but it encompasses tumors of various origins. We analyzed our experience with primary chest wall tumors with emphasis on its demographic presentation and management.

Methods: From 1991 to 2004, 62 patients with the diagnosis of primary chest wall tumors were enrolled. Lipoma, chest wall metastasis, direct invasion from nearby malignancy, infection, and inflammation of chest wall were excluded. The clinical features, management, and the outcome of these patients were retrospectively reviewed.

Results: There were 37 males and 25 females. Malignant and benign tumors were equally distributed. Chondrosarcoma and lymphoma were the 2 most common types of malignant chest wall tumors. The most common clinical symptoms were palpable mass (54.8%) and pain (40.3%). Nine of 31 patients (29.0%) with benign chest wall tumors were free of symptoms whereas patients with malignant chest wall tumors were all symptomatic ($p = 0.002$). A definite diagnosis was obtained in 21 of 26 patients (80.7%) who received nonexcision biopsy. All patients with primary chest wall tumors, except 6 who had medical treatment only, underwent surgical resection. Patients with malignant chest wall tumors were older than those with benign tumors ($p < 0.001$). The mean largest diameter of tumors was also larger in malignant tumors than in benign tumors ($p = 0.04$).

Conclusion: Patients with primary malignant chest wall neoplasm were older than those with benign tumors. The mean size of malignant tumors was larger than that of benign tumors. Adequate surgical resection remains the treatment of choice for patients with primary chest wall tumors. Nonexcision biopsy should be reserved for patients with a past history of malignancy, suspicion of hematologic disease, and with high operative risk. For patients with isolated chest wall lymphoma, surgical resection followed by chemotherapy can be considered to obtain a better outcome. [*J Chin Med Assoc* 2006;69(8):377–382]

Key Words: chest wall tumor, metastatic chest wall tumor

Introduction

Primary chest wall tumor is rare and represents about 5% of all thoracic neoplasms.[1–3] It encompasses tumors of various origins, including bone and cartilage, soft tissue such as muscle, vessel, nerve, and even some hematologic diseases.[1,4,5] Only 8% of primary bone tumors occur in the chest wall.[6] The clinical presentation of primary chest wall tumor is nonspecific. It is sometimes difficult to make an accurate diagnosis before histologic examination. Although the technique of chest wall reconstruction has evolved and aggressive resection is now safe and reliable,[4,5,7–9] wide resection is not applicable to all kinds of primary chest wall tumors. The dilemma met in precise preoperative diagnosis complicates the treatment planning. Here, we retrospectively reviewed our experience in managing 62 patients with primary chest wall tumors from 1991 to 2004. This study puts emphasis on the demographic presentation and the approaches in the management of primary chest wall tumors.

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Methods

From 1991 to 2004, 62 patients with the diagnosis of primary chest wall tumors were enrolled in this study. The definition of primary chest wall tumors is neoplasms arising from structures that support the thorax, including bone, cartilage, and associated soft tissue. Patients with chest wall lipoma, metastatic chest wall lesions, chest wall invasion from nearby malignancy (breast cancer, lung cancer, mesothelioma), chest wall infection (e.g. cold abscess by *Mycobacterium tuberculosis*), and chest wall inflammation (e.g. Tietze's syndrome) were excluded. The medical charts of 62 patients were retrospectively reviewed. Clinical data including history, gender, age, clinical symptoms, imaging findings (chest X-ray [CXR], computed tomography [CT], bone scan), tumor size, location, hospital stay, operation methods, pathology reports, and outcome were collected. Pathologic diagnosis was made by nonexcision biopsy (fine needle aspiration and/or incision biopsy) or histologic examination from surgical specimens. Origins of neoplasms were classified into osseous and cartilaginous, soft tissue (e.g. muscle, vessel, peripheral nerve, fibrous tissue), and hematologic (e.g. lymphoma, plasmacytoma). The follow-up period was determined from the date of admission to the latest date of medical record or telephone contact. Outcome was recorded as with or without recurrence or metastasis. Two patients were lost to follow-up and were not included in the outcome analysis. The mean follow-up period was 42 months (range, 1–152 months) among the remaining 60 patients. The follow-up rate in this study was 96.8%.

Table 1. Demographic data of 62 patients with primary chest wall tumor

	n (%)
Benign/malignant	31/31
Sex (male/female)	37/25
Age (yr)	51.18 ± 19.97
Tumor size (cm)	7.84 ± 5.35
Symptoms	
None	9 (14.5)
Pain	25 (40.3)
Mass	34 (54.8)
Cough	3 (4.8)
Dyspnea	1 (1.6)
Neurologic	3 (4.8)
Treatment	
Medical treatment	6 (9.7)
Surgical excision	30 (90.3)

Continuous variables were expressed as mean ± SD. Statistical analysis was performed using Fisher's exact test and χ^2 test for categorical variables, and *t* and ANOVA tests for continuous variable comparison. A value of $p < 0.05$ was considered statistically significant.

Results

Tables 1 and 2 show the demographic data and pathologic diagnosis of 62 patients with primary chest wall tumors. Their mean age was 51.18 ± 19.97 years (range, 11–84 years). There were 37 males and 25 females. Thirty-one patients had benign tumors

Table 2. Pathologic diagnosis of 62 patients with primary chest wall tumor

	n
Benign	
Bone and cartilaginous	
Chondroma	3
Chondroblastoma	1
Chondromatous hamartoma	1
Chondromyxoid fibroma	1
Fibrous dysplasia	2
Giant cell tumor	1
Oseochondroma	3
Soft tissue	
Angiolipoma	1
Cavernous lymphangioma	1
Fibrolipoma	1
Fibrous tumor	4
Ganglioneuroma	2
Hemangioma	1
Leiomyoma	2
Schwannoma	5
Neurofibroma	2
Malignant	
Bone and cartilaginous	
Chondrosarcoma	7
Osteosarcoma	2
Soft tissue	
Dermatofibrosarcoma protuberance	3
Epithelioid angiosarcoma	1
Hemangiopericytoma	1
Leiomyosarcoma	1
Liposarcoma	1
Malignant fibrous histiocytoma	2
Neuroendocrine tumor	1
Sarcomatoid carcinoma	1
Hematologic disease	
Lymphoma	9
Plasmacytoma	2