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CHEST WALL TUMOURS

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Summary

Thirty one patients were referred to the cardiothoracic unit at the Teaching Hospital in Basrah between 1998-2002. All patients were assessed, operated on then followed up in the outpatient clinic. They were 17 females and 14 males, their age range from 7-70 years. Fourteen patients had benign tumours and 17 had malignant tumours, ten of them had primary malignant tumours, and 7 had metastatic tumours. All patients with benign tumours were presented with painless chest wall swelling, while those with malignant tumours presented with painful swelling. The locations of the tumours were in anterior chest wall in 15 patients, in the lateral wall in 12 patients, while the posterior wall is the site in 4 patients.

Thirty patients underwent surgical resection of the tumours, 14 patients had rib resection, and the number of the resected ribs was determined by the size of the tumour and range from 1-4 ribs. Reconstruction of the defects was performed by using Marlex mesh covered by cutaneous or myocutaneous flaps there were no operative deaths. Hospitalization days range from 4 to 14 days. Post operative complications occurred in 6 patients, which include wound infection in 5 patients and acute bronchitis in one patient. Recurrence of the tumours developed in 9 patients, all those with benign tumours are alive while 12 of those with malignant tumours whether primary or secondary are dead due to metastasis. The aim of this study is to prove that malignant chest wall tumours need an aggressive approach with wide resection in order to have effective treatment.

Introduction

Chest wall tumours are rare, their incidence is less than 1%[1,2]. The majority of the tumours are benign[2,3]. They encompass a wide range of soft tissue, connective tissue, and bone[1,2,4,5]. The soft tissue is the major source of chest wall tumour and account for more than 80% of resected tumours[5-8].

The primary malignant tumour represents 50-80% of malignant neoplasm of the chest wall[3,4] . The metastatic tumours can result from either direct infiltration of the chest wall from lung or breast or haematogenous spread from other tissue as the kidneys[3,9-19].

Most of the tumours presented as enlarge mass with or without pain[1,4,9]. The management of the chest wall tumours, in many centers, at present time is wide resection (anabolic) with removal of the affected structure and a large area of surrounding normal tissue whether they are benign or malignant on assumption that the majority of the tumours are malignant with high rate of recurrence[2,4,7-11]. However the benign rate in patients with chest wall tumours in many studies[1,4,5,8] is high (50-80%), with low rate of malignant lesion, so the management of the chest wall tumours with limited excisional biopsy at first then the resection will planned according to the result, in this way avoids the unnecessary radical chest wall resection.

Patients and Methods

Between January 1998 and January 2002, thirty one patients were seen and treated at Cardio-Thoracic Department (Basrah Teaching Hospital), with chest wall tumours.

On admission: all data concerned age, sex, clinical presentation and symptoms were analyzed, then examination done and all patients had chest radiography and in selected cases CT scan or MRI were done to find the extent of chest wall invasion.

Surgical resections were carried out to all tumours, histological types were obtained and the method of final treatment then decided either with or without chest wall reconstruction.

Results

There were 17 females and 14 males with age ranging from 7 to 70 years, from those 4 were children (Table I)

Fourteen patients had benign tumours (6 males & 8 females). Seventeen patients had malignant tumours, 10 patients had primary malignant tumours (7 males & 3 females), and 7 patients had metastatic tumours (1 male & 6 females), (Table II).

The majority of the patients presented with a painless mass, while 9 of the patients had a painful mass. Patients with benign tumours presented with painless mass except one who had a painful mass. Those with malignant tumours, eight of them presented with painful mass, one of those patients has associated skin ulceration. The metastatic tumours presented with painful mass (Table III).

The majority of the tumours were located at anterior chest wall (15 patients), with equal distribution between benign and malignant tumours. Twelve of the cases presented with a mass at lateral chest wall, five of them are benign and 7 malignant with two secondaries. Posteriorly located tumours were presented only in 4 tumours; all of them were benign (Table IV).

Tumours were predominantly located in the soft tissue in 15 patients and ribs in 11 patients, while sternum was involved in 2 patients (Table V).

Thirty one patients underwent resection of tumours, 16 had primary closure of the wound without reconstruction of the chest wall, 14 had rib resection with reconstruction of the chest wall, 5 using cutaneous or myocutaneous flaps with Marlex mesh, 9 with flap only , 6 of them with local rotation or transposition flaps and 3 with distant flaps (Table VI).

Lipoma was the commonest benign soft tissue tumours, chondroma and osteomas were the commonest cartilage and bone benign tumours. Sarcoma was the predominant primary malignant tumour of both soft tissue and bone (Table VII).

Average hospitalization was 9 days, there were no operative deaths, but postoperative complications had occurred in 6 patients and includes, wound infection in 5 patients and bronchitis in one patient.

Recurrent chest wall tumour developed in 9 patients. All the patients with benign tumours were alive and well with good healing of the chest wound during the follow up period. While those with the secondaries both primary and metastatic, 12 of them died within, while the other 5 patients were failed to show in the follow up clinic.

Discussion

Chest wall tumours are uncommon and account for <1% of all body tumours[1-3]. The malignant chest wall tumours represent only 5% of all thoracic malignancy[1,3,5].

The incidence of benign tumours was more than malignant tumours both primary and secondary Females (54.8%) in this study are out number

the male (45.7%)[3,4,7,9], while in other studies the incidence is more in favor of males[10-12], this fluctuating in the results are mostly due to infrequency of the occurrence of chest wall tumours[4,5] (Table I).

In our study, all the patients were adults with the exception of four children. All the children had benign tumours while other studies show high incidence of malignant chest wall tumours in children[3,12,13,15,20,21].

The incidence of benign tumours was more than malignant tumours both primary and secondary, which is similar to other workers findings[6,7,10], however primary malignant tumours where more than secondaries[5,6,8], other studies had found that secondaries were more than primary tumours[3,17,19] (Table II).

The majority of chest wall tumours were presented as chest wall mass, most of them associated with pain which is the prevalent symptom in the malignant tumours, while the majority of the benign tumours were presented as painless mass except in one patient with aneurysmal bone cyst complaining of painful swelling (Table III).

The location of chest wall tumours in our work in the majority of the cases were in the anterior aspect of the chest wall, while other authors found the lateral aspect is the most common location[2,3] (Table IV).

We found that the soft tissue of the chest wall is the major source of the of the tumours both benign and malignant[1,2,4,5,16] (Table V).

Benign tumours were managed by simple excision with free margin and the defect then sutured[4,9,18]. Resection of primary malignant tumours was carried out and it includes all the involved soft tissue or bone or both with wide margin, about 4 cm of the normal tissue all around the tumour. The defect in the chest wall then reconstructed with or without a mesh (marlex or polytetraflurorethylene patch) to reconstruct the defect[7,9,11,18-26]. The omentum transposition to repair the defect was not used in this work the same as other authors[23,26,27]. Soft tissue defect were reconstructed using local or distant flaps from posterior chest wall[10,11,21,28].Some authors subject the patients to radiotherapy then surgical excision in cases of secondary deposit[19]. Lipoma and chondroma were the most common benign tumours. Malignant histiocytoma was the most common soft tissue malignant tumour[13,15], this differs from other authors finding[2,6,14]. The majority of metastatic tumours come from the breast and lung cancers which next in frequency[9,17-19] (Table VII).

In conclusion, early diagnosis is the corner stone in successful treatment. Careful clinical history and examination with radiological and histological investigations is very important to achieve early treatment and to get better prognosis. Wide excision of the tumours and reconstruction of the chest wall defect, soft tissue and bone, remain the best way to successful management.

Age	Number	Percentage
1-10	3	9.67
11-20	6	19.3
21-30	3	9.67
31-40	4	12.9
41-50	8	25.8
51-60	3	9.67
61-70	4	12.9

Table I: Age distribution.

Tumor	Sex	Percentage	Total
Benign Tumors	Male : 6	19.3	14
	Female : 8	25.8	
Primary Malignant	Male : 7	22.6	10
	Female: 3	9.67	
Secondary Malignant	Male : 1	3.2	7
	Female : 6	19.6	

Table II: Type & Sex distribution of the tumors.

Type	Number	Mass	Pain	Other
Benign	14	2	1	-
Primary Malignant	10	9	8	Skin ulceration
Secondary Malignant	7	7	6	Pleural effusion

Table III: Type and presentation of the tumors.

Site	Type of the tumors			Percentage
	Benign	Primary	secondary	
Anterior	5	5	5	48
Lateral	5	5	2	39
Posterior	4	0	0	13

Table IV: Location of the tumor.

Type	Benign	Primary	Secondary	Total
Soft tissue	8	5	2	15
Rib	6	2	3	11
Rib & soft tissue	0	3	0	3
Sternum	0	0	2	2

Table V: Site of various types of the tumors.

Type of closure	Number	
Primary		16
Flap with mesh	Local	1
	Distant	4
Flap without mesh	Local	6
	Distant	3

Table VI: Type of Reconstruction.

Benign		Primary		Secondary	
Lipoma	5	Chondrosarcoma	2	Brest ca.	3
Chondroma	4	Histocytoma	3	Lung ca	2
Haemangioma	3	Haemangiosarcoma	1	Testicular Tumor	1
Neurofibroma	1	Squamous cell ca.	1	Lymphoma	1
Aneurysmal cyst	1	Rhabdomyosarcoma	1	---	--
---		Osteosarcoma	1	---	--
---		Skin tumour	1	---	--
Total =	14	Total =	10	Total =	7

Table VII: Histological types of the tumors.

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