Atypical Presentation of Thoracic Outlet Syndrome in Kurdistan of Iraq

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ABSTRACT

Background and Objectives: Thoracic outlet syndrome (TOS) is a clinical phenomenon resulting from compression of neurovascular structures at the superior aperture of the thorax which presents with varying symptoms The aim of this study was to analyze the different kinds of clinical presentation of thoracic outlet syndrome in Kurdistan region of Iraq and its management.

Methods: In Erbil teaching hospital, 150 patients have been studied from February 2000-December 2006. These patients diagnosed as symptomatic thoracic outlet syndrome and have been managed conservatively and surgically.

Results: In this study 97 (64.6%) patients were female, 53 (35.3%) patients were male. Their ages ranged from (17-40) years. There was pain, parasthesia in arm in 69 (46%). Shoulder pain, chest pain and pain in axillary's region with arm pain in 38 (25.3%) patients (diagnosed by cardiologist as they have cardiac problem and treated accordingly without benefit). Incidental findings in 27 (18%) patients with vague symptoms in upper limb, supraclavicular fullness in 2 (1.3%) patients, 12 (8%) patients diagnosed by psychiatrist as having psychological problem (misdiagnosed as obsessive or depressive cases because of there neck pain and headache) and one patient has wasting of hand muscles. Surgery done for 25 (20.5%) patients (supra clavicular approach)

Conclusions: Careful patient's history and proper physical and clinical evaluation including nerve conduction study, conventional radiography of cervical spine can decide proper management for symptomatic cases conservatively or surgically.

Keywords: Thoracic outlet syndrome (TOS), conservative treatment, surgery and supraclavicular approach.

INTRODUCTION:

Thoracic outlet is the area from the outer edge of the first rib laterally to the upper medial mediastinum, continuing cephalad to the level of the fifth cervical nerve root [1]. The middle and anterior scalene muscles, the five primary nerves and three trunks that comprise the brachial plexus, the phrenic nerve, long thoracic, suprascapular, and dorsal scapular nerves, the stellate ganglion, the subclavian artery and vein, the thoracic duct, scalene lymph nodes, and the apex of the lung lie in this anatomic space [2]. For surgical purposes, both approach can be used (supraclavicular approach, transaxillary approach) depending on surgeon experience [3] .

Thoracic outlet syndrome (TOS) is a clinical phenomenon resulting from compression of neurovascular structures at the superior aperture of the thorax which presents with varying symptoms [1, 3]. The term TOS was used for the first time in the literature by Rob and Standeven in 1958. This clinical picture has also been named as costoclavicular syndrome, cervical rib syndrome, scalenius anticus syndrome, subclavius tendon syndrome or musculus pectoralis major syndrome by various authors [2]. The neurovascular compression syndrome (TOS) result from pressure on the brachial plexuses or on subclavian ar-

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-tery or vein as it courses through the neck and the thoracic outlet to word the axilla. The syndrome may be caused by a cervical rib or it is fibrous band attachment, hypertrophy or spasm of scalenus anterior muscle, an abnormal drop of shoulder girdle, spasm of scalenus medius, fracture of first rib or clavicle, edema of structure bounding outlet secondary to direct blow to shoulder, anomalies to first rib, abnormal tension on pectoralis minor, osteoarthritis of the first costovertebral joint [1]. For more than 100 years various surgical treatments for TOS, such as resection of the cervical rib, resection of the clavicle, resection of the first-rib or resection of the tendon of scalene anterior or pectoral muscles by either posterior, cervical or supraclavicular approaches have been tried [4].

MATERIALS AND METHODS:

Symptoms:

In Erbil teaching hospital 150 patients have been studied from Feb2000-Dec2006. Their symptoms were as followings:

Related to acute or chronic neurological compression, localized arm pain, paraesthesia, numbness in upper limb, chest pain, neck pain, scapular pain, shoulder pain in addition to one patient had cyanosis of fingers of the hand which referred to vascular surgeon.

Investigation:

In all our cases hemoglobin level, blood group and Radiograph done for cervical spine and chest which will reveal cervical ribs, large C7 transverse process that can compress brachial plexus, in addition nerve conduction study done. Magnetic resonance imaging (which used to determine the location and cause of compression of the brachial plexus nerves or the subclavian artery, the scan can also reveal any congenital anomalies) not done in this study because high tesla M.R.I. not available at time but available M.R.I. (0.2 tesla) done to exclude cervical spine disc herniation or spinal cord disease. In patient with vascular compression we refer the case to vascular surgeon (this excluded from study). In final diagnosis we exclude cases with brachial neuritis, spinal diseases, cervical discopathy, carpal tunnel syndrome, cubital tunnel syndrome, pancoast's tumour and other cause of compression neuropathy from our study. In all patient conservative measure are tried (shrugging shoulder exercise, physical therapy, non-steroidal anti inflammatory drug, modification of behavior at home and work) which is necessary for short term relief of symptom. Surgery was performed on patients for whom conservative measure had failed, sever pain, muscle wasting, vascular disturbance, and EMG Consistent with TOS. All cases which are operated on we use supraclavicular approach. In surgery our aim was to decompress thoracic outlet by resecting the offending structure, that is, cervical rib and its anterior fibrous attachment, part of scalenus anterior or scalenus medius myotomy according to the structure causing compression.

Follow up evaluation:

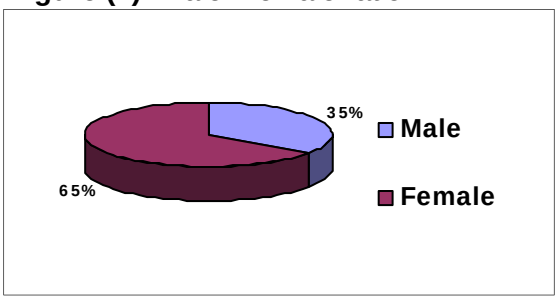
The criteria for follow up evaluation are considered very good for cases who have no symptom after operation, those with greater ratio of remission of symptom were classified as good and cases with no or little amelioration of symptom were classified as bad .Exercise were ordered post operatively, Patients evaluated periodically with in six months however there is no routine schedule of follow up after six month (irregular follow up).

RESULTS:

In this study: 97 (64.6%) of patients were females and 53 (35.5%) patients were males, (Figure 1).

To 150 patients whose age's ranges between (17-40 years) a total number of 25 (16.7%) operations were performed. The most important symptoms were pain and parasthesia in both arm and hand 39(26%) of patients and unilaterally in 30 (20%) patients

Figure (1): Male: Female ratio.



Shoulder pain, scapular pain, chest pain and pain in axillary's region, arm pain 38 (25.3%) patients. Incidental finding in 27 (18%) patients, supraclavicular fullness and pain in the neck in 2 (1.3%) patients. 12 (8%) patients diagnosed as psychological problem and 1 (0.7%) patient had wasting of hand muscle and 69 (46%) patient they have parasthesia in the upper limb, (Table 1).

Table (1): Types of presentation

Types of presentation	No. of patients
Parasthesia	69 (46%)
Shoulder pain, chest pain, pain in axillary's region, arm pain	38 (25.3%)
Incidental finding	27 (18%)
Psychological problem	12 (8%)
Supraclavicular fullness	2 (1.3%)
Cyanosis of fingers of hand	1 (0.7%)
Wasting of the hand muscles (interinsing muscle)	1 (0.7%)
Total	150

All patients in whom presentation was chest pain were excluded from medical problem by medical consultation despite their medical treatment and the same process done for those patients with neck pain, chronic headache of undiagnosed etiology by consulting psychiatrist and neurologist. There were no pathologies in routine blood test. Preoperative EMG done for those cases with parasthesia in the hand and EMG test result will consistent with thoracic outlet syndrome in 46% of cases, F wave prolonged more than 33 msec in upper limbs, EMG show denervation in c8 T1 muscle group, Emg show normal finding in muscle not of c8 t1. Median, ulnar, and radial nerves show normal findings. On radiological investigation 50% of patients were found to have cervical rib 15 of those were bilateral and 60 were unilateral, physical therapy applied for 122 patients and because symptom continue in 37 (24.7%) patients, only 25 (20.5%) of the cases agreed for operation and 12 (8%) patients refused operation despite their symptoms and we continued conservative treatment. In all patients supraclavicular approach used.

Operative finding for those cases are 10 patients have fibrous band attached to the tip of cervical rib and 6 patients they have cervical rib compressing brachial plexus (one case bilateral and 5cases unilateral), from these 6 patients 2 patients had complete rib and four was incomplete rib. 9 patients have tight scalenius anterior and medius muscle we did for them myotomy, (Table 2).

Table (2): Operative findings.

Operative finding	No. of Patients
Fibrous band	10
Cervical rib	1bilateral 5 unilateral
Tight scalenus anterior and medius	9
Total	25

During the operation care has been taken to avoid injuries to phrenic nerve and vascular structure. In those operated on (25 patients), 11 patient showed very good result, 8 patients good result and 6 patients

considered as bad, (Table 3).

Table (3): Result of operations.

Result of operations	No of Patients.
Very good	11
Good	8
Bad	6
Total	25

Out of 6 patients, 3 of them developed infection and one of them faced difficulties in removing cervical rib, because of parietal tear of subclavian artery during cutting cervical rib (artery was repair by vascular surgeon), 2 patients had symptom postoperatively, because of in complete removal of rib, (Table 4).

Table (4): Postoperative complications.

Types of complications	No. of Patients
Wound infection	3
Partial tear of subclavian artery	1
Incomplete removal of large cervical rib	2
Total	6

The average hospital stay for those cases which are operated on was 5 days (3-10 days).

Our patients had pain and numbness in various locations for the first two months postoperatively in their long term follow up and their was no serious complications. About 12 patients could follow up for approximately 5 years.

DISCUSSION:

There are unilluminated point in etiology and pathophysiology of thoracic outlet syndrome even though their have been improvement in treatment and careful studies have been made about anatomical details. [5]. Presence of cervical rib is not always clearly related to the syndrome. Since cervical ribs can be observed in (0.5-1%) of general population, only 10% of these patients presented with symptoms, only (3-30%) of thoracic outlet syndrome cases have cervical rib [5]. This ratio is 50%in our study There are congenital predisposing reasons for most thoracic outlet syndrome [6].The emergence of symptom up on the congenital predisposing factor in second to third decade seems to be related to minor or major traumas, the pain- spasm, vicious cycle, excessive muscular activity with myotendnitis and body posture. Because there are fibro muscular ligaments in 98% of patients with thoracic outlet syndrome [5].

The narrowing of thoracic aperture cause symptom of thoracic outlet syndrome to appear, this symptoms are largely due to compression of brachial plexuses [7] and in our study 69 (46%) patients present with parasthesia. In 2-10% of the cases there is vascular compression [1].

This ratio is 1 (0.7%) patient in our study. Although Caldewell et al reported EMG measurement and nerve conduction speed are objective criteria as diagnostic tests in TOS. It's generally accepted that nerve conduction velocities are significant in making the differential diagnosis between TOS and carpal tunnel syndrome, cubital tunnel syndrome or other orthopedic shoulder and hand problem [8].

In our series 46% of cases were found to be consistent with TOS diagnosis. Additionally in differential diagnosis of TOS cervical discopathy and spinal cord lesion should be taken in to account too [9]. Primarily conservative treatment should be given in Thoracic outlet syndrome patient with mild to moderate symptoms, have high chance of benefiting from physical therapy,

but in cases with serious neurological and vascular compression there is no need to have primary conservative therapy [8]. The most important point is the fact that exercises should be started in very early postoperative hours and continued for about two months as in this study. These applications will reduce adhesion and indirectly decreases relapse [5, 8]. Some of postoperative complications in our study are resolved with conservative treatment (infection, haematoma). in our study the very good and good results are (11 patients, 8 patients) respectively (76%). While in Devender study [4]. Successes ratio vary between (82%-96%) in operative cases.

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