

Original Research Article

A prospective study of arthroscopic evaluation of patients with chronic shoulder pain

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ABSTRACT

Background: Shoulder pain is a common musculoskeletal complaint that may be due either to intrinsic disorders of the shoulder or referred pain. In this study, we aimed to find out the sensitivity and specificity of the clinical and radiological methods in diagnosing the chronic shoulder problems and to compare clinical and radiological diagnosis with arthroscopic diagnosis.

Methods: After obtaining approval of the institutional ethics committee, we enrolled patients who presented with chronic shoulder pain in the outpatient clinic of Department of Orthopedics, DY Patil Medical College and Hospital, Navi Mumbai from August 2003 till August 2005. We obtained historical data of each patient in detail and made clinical, radiological and arthroscopic diagnosis. The findings from each diagnostic modality were compared and analysed.

Results: During the study period, 34 patients were enrolled in the study. Injury was traumatic in 32% of the patients and 50% of all patients were heavy workers by occupation. Half of all the patients had pain in shoulder for more than 6 months. Clinical diagnosis of biceps tendinitis was made in 44% of patients, but radiological and arthroscopic diagnosis of biceps tendinitis was made in 18% and 12% respectively. Impingement was diagnosed in 29% patients clinically, in 15% patients radiologically and in 21% patients arthroscopically. Rotator cuff injury was diagnosed in 26% patients clinically, in 41% patients radiologically and in 67% patients arthroscopically.

Conclusions: Findings from this single centre study suggest that arthroscopy can diagnose and treat conditions causing chronic shoulder pain, which is cost effective as well.

Keywords: Accuracy, Arthroscopy, Diagnosis, Shoulder, Pain

INTRODUCTION

Shoulder pain is a common musculoskeletal complaint that may be due either to intrinsic disorders of the shoulder or referred pain. The former include injuries and acute or chronic inflammation of the shoulder joint, tendons, surrounding ligaments, or periarticular structures.¹ The complex anatomy and physiology of the

shoulder, the most mobile and unstable joint, requires choosing proper imaging studies for different clinical scenarios. Plain radiographs of the shoulder generally have limited benefit in the evaluation of nontraumatic shoulder pain. Shoulder imaging, plain radiographs in different views complemented with ultrasonography and magnetic resonance imaging often give a dilemma for single diagnosis of any of the pathology causing chronic

shoulder pain.² Progress in arthroscopy, especially in arthroscopic surgery has been rapid in the past several years. The arthroscope has dramatically changed the way in which the orthopedic surgeons approach the diagnosis and treatment of a variety of joint ailments. The low morbidity associated with arthroscopy makes the procedure justifiable in variety of joint disorders as possible adjunct to diagnosis to determine prognosis, and as a treatment modality.³ In this study, we aimed to find out the sensitivity and specificity of the clinical and radiological methods in diagnosing the chronic shoulder problems and to compare clinical and radiological diagnosis with arthroscopic diagnosis.

METHODS

Study design and sample population

We designed a prospective study to evaluate patients with chronic shoulder pain arthroscopically. After obtaining approval of the institutional ethics committee, we enrolled all patients who presented with complaints of chronic shoulder pain in the outpatient clinic of the Department of Orthopedics, DY Patil Medical College and Hospital, Navi Mumbai from August 2003 till August 2005. Each patient underwent clinical, radiological and arthroscopic evaluation to assess the accuracy of arthroscopic evaluation. Each patient received conservative treatment which included analgesics, local heat, local infiltration and exercise. Few patients who required surgery were followed up further.

Data collection and data analysis

After obtaining approval of the ethics committee, we interviewed the patients and collected complete history of the patients' age, dominant hand and sport or work activity. The patients were asked about shoulder pain, instability, stiffness, locking, catching and swelling. We established the location, quality, radiation, and aggravating and relieving factors of the shoulder pain, after which the possibility of referred pain was excluded. The patients were asked about paresthesias and muscle weakness. We also asked about the history of pneumonia, cardiac ischemia and peptic ulcer disease, malignancy and previous corticosteroid injections. After collecting historical data, complete physical examination along with assessment of range of motion and strength, and provocative shoulder testing for possible impingement syndrome and glenohumeral instability was performed on each patient. The neck and the elbow was also examined to exclude the possibility of referred pain. All patients underwent radiological investigations. Plain X rays anteroposterior and lateral view in the plane of scapula and axillary views were taken. Some patients also received ultrasonograms. Radiological investigations were performed as per the discretion of the treating surgeon. All patients underwent arthroscopic evaluation using nos. 10, 30 and 70. The collected data were tabulated and entered in SPSS (version 16) to compare

clinical and radiological diagnosis with arthroscopic diagnosis using appropriate statistical techniques.

RESULTS

Table 1: Baseline characteristics of patients.

Variable	n (%)
Number of patients	34
Males	25 (74)
Age distribution	
Less than 20 years	0 (0)
20-45 years	14 (41)
More than 45 years	20 (59)
Dominant side involved	22 (65)
Mode of injury	
Traumatic	11 (32)
Non-traumatic	23 (36)
Occupation	
Housewife	6 (18)
Light work	5 (14)
Moderate work	6 (18)
Heavy work	17 (50)
Duration of pain	
Less than 1 month	5 (15)
1 month to 6 months	12 (35)
More than 6 months	17 (50)

Table 2: Diagnosis of patients according to different modalities.

Clinical diagnosis	n (%)
Biceps tendinitis	15 (44)
Rotator cuff tear	9 (26)
Impingement	10 (29)
Radiological diagnosis	
Normal	9 (26)
Biceps tendinitis	6 (18)
Rotator cuff tear	14 (41)
Impingement	5 (15)
Arthroscopic diagnosis	
Biceps tendinitis	4 (12)
Rotator cuff tear	22 (67)
Impingement	7 (21)
Labral tear	1 (3)

During the study period, 34 patients were enrolled in the study of which 74% were males. Majority of the patients were aged more than 45 years (59%) and had dominant side involved (65%). Injury was traumatic in 32% of the patients and 50% of all patients were heavy workers (Table 1). Half of all the patients had pain in shoulder for more than 6 months. Clinical diagnosis of biceps tendinitis was made in 44% of patients, but radiological and arthroscopic diagnosis of biceps tendinitis was made in 18% and 12% respectively. Impingement was diagnosed in 29% patients clinically, in 15% patients

radiologically and in 21% patients arthroscopically (Table 2). Rotator cuff injury was diagnosed in 26% patients clinically, in 41% patients radiologically and in 67% patients arthroscopically.

DISCUSSION

Majority of the patients presenting with chronic shoulder pain during the study period were males. Similar trend has been seen in previous studies as well.^{4,5} The majority of patients who present to outpatient clinics with shoulder pain have an intrinsic disorder. Acute symptoms in patients with a history of recent shoulder trauma are typically due to an acromioclavicular (AC) separation, glenohumeral dislocation, fracture, or rotator cuff tear.⁶ Various historical factors can help in differentiating etiological factors. Patient age is one such factor. Sports injuries due to overuse and subluxation of the glenohumeral joint are most common in adolescents and young adults. Sprain of the acromioclavicular ligaments is more common in younger patients and is seen following a fall, with the arm adducted, directly onto the acromion, commonly referred to as the point or tip of the shoulder. Middle-aged and older individuals more often develop shoulder pain due to rotator cuff lesions, such as supraspinatus tendinopathy and partial or full-thickness tendon tears.⁷ Frozen shoulder syndrome and symptomatic osteoarthritis also occur predominately in older patients. Average age of patients in our study was 45.8 years.

To evaluate the accuracy of radiological and arthroscopic diagnosis, we first diagnosed patients clinically. Although some components of the examination, such as inspection and a basic neurovascular evaluation are universal, other components are performed selectively based upon the diagnoses being entertained. The anatomy of the shoulder is complex and the differential diagnosis broad. Clinical examination should be able to differentiate extrinsic versus intrinsic etiologies, glenohumeral versus extraglenohumeral, followed by differentiating glenohumeral pathology. In our study population, we found rotator cuff injury, impingement syndrome and biceps tendinitis as the three groups of diagnosis. All these diagnosis were made with radiological and arthroscopic investigations to see their correlations. Only 9 patients were diagnosed clinically with rotator cuff injury, while 14 and 22 were diagnosed with the same condition radiologically and arthroscopically respectively. Plain radiographs of the shoulder generally have limited benefit in the evaluation of nontraumatic shoulder pain. This was demonstrated in a study of 312 patients seen in an emergency department setting for shoulder pain, in which only 37 of the 185 shoulder radiographs were therapeutically informative.⁸ When plain films are obtained in a patient with a history of trauma, both AP and axillary views are warranted since some conditions can be missed on the former alone.

It has been reported that ultrasonography can also miss a lot of cases of rotator cuff tears which were subsequently found on arthroscopy.⁹ Magnetic resonance imaging is very close in sensitivity and specificity to arthroscopy in diagnosing shoulder conditions.¹⁰ Considering the cost, one can prefer arthroscopy over MRI as it can treat the pathology in the same sitting if possible. In case of impingement syndrome also clinical diagnosis was sensitive but not specific. But clinical diagnosis had better results than radiological results as is evident by the fact that more number of cases of impingement syndrome are missed radiologically than clinically. So clinical methods are better methods for diagnosis of impingement than radiological methods except magnetic resonance imaging.

CONCLUSION

This single center study looked at the accuracy of various modalities in diagnosing etiologies of chronic shoulder pain. Large number of false negative cases when conditions are diagnosed clinically. Our findings suggest that arthroscopy can diagnose and treat conditions causing chronic shoulder pain, which is cost effective as well. However, further studies are required to look at the usefulness of ultrasonography and newer modalities in diagnosing conditions leading to chronic shoulder pain.

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Ethical approval: The study was approved by the institutional ethics committee

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