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Etiology of rotator cuff tears: A Cross Sectional Study

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Abstract

Introduction: *Rotator cuff tears are among the most common conditions affecting the shoulder. They have long been recognized as a cause of pain and disability. Most of the times the symptoms are insidious (other than traumatic causes) and first present as a loss of power when the arm is abducted and laterally rotated in simple everyday actions such as doing hair. The aim of this study was to determine the etiology of rotator cuff tears so that a viable treatment option could be offered to the patient population.*

Materials and Methods: *The present study was conducted in the Postgraduate Department of Orthopaedics, Hospital for Bone and Joint Surgery, Barzulla, Srinagar, an associate hospital of Government Medical College Srinagar Kashmir, from June 2015 to May 2018. This was a prospective study in which 175 unselected patients of either gender in the age group of 18 to75 years with rotator cuff tear were asked about any history of trauma, duration of symptoms, and mode of trauma if present .*

Results: *Traumatic etiology was seen in 52% of the cases. Indirect trauma to shoulder in the form of fall on an outstretched hand and lifting of heavy object accounted for 46.16% of cases and direct trauma to shoulder in the form of direct landing onto the shoulder or fall of a weight onto the shoulder accounted for 53.84% of cases.*

Conclusion: *Definitive traumatic incident as a precursor of symptoms was recognised in 91cases (52%) while 84 cases (48%) had no history of trauma.The younger population are more likely to have a history of trauma while as in older population the tears are mostly degenerative. In patients with degenerative tears, the bone quality is usually weaker and in such cases the suture anchors are directly placed into the bone without prior drilling in order to get a stronger hold and prevent suture anchor back-out.*

Introduction

Rotator cuff tears are among the most common conditions affecting the shoulder.[1] They have long been recognized as a cause of pain and disability. Most of the times the symptoms are insidious(other than traumatic causes) and first present as a loss of power when the arm is abducted and laterally rotated in simple everyday actions such as doing hair.[2]

The prevalence of shoulder problems based on consultations in primary care is estimated to be 2.4%. Between 30% and 70% of such shoulder pain is due to disorders of rotator cuff.[3] Cadaveric studies have shown a 17% to 30% incidence of full thickness rotator cuff tears. Studies on asymptomatic patients have shown rotator cuff tear incidence of 20% to 54% in patients older than 60 years and 51% to 80% in patients older than 80yrs[4]. Also 4% of asymptomatic patients aged <40yrs and 54% of patients aged >60yrs having partial or complete tears of the rotator cuff on an MRI scan.[5]

Etiology

Rotator cuff tears can be acute or degenerative.

1. Traumatic Tears: Mostly caused by fall on outstretched arm or jerky movement during lifting of heavy weight. May be associated with other shoulder injuries like shoulder dislocation or clavicular fractures.

2.Degenerative Tears:- Most tears are of this type. Degeneration naturally occurs as we age. Several factors contribute:

a. Repetitive stress: sports activities like baseball, weight lifting, rowing etc. involving overuse of the cuff muscles.
b. Lack of blood supply: as age progresses with inability to repair tendon damage ultimately leading to tear.
c. Impingement: from bony spurs that develop with age on the undersurface of the acromion.

Materials and Methods

The present study was conducted in the Postgraduate Department of Orthopaedics, Hospital for Bone and Joint Surgery, Barzulla, Srinagar, an associate hospital of Government Medical College Srinagar Kashmir, from June 2015 to May 2018. This was a prospective study in which 175 unselected patients of either gender in the age group of 18 to75 years with rotator cuff tear were asked about any history of trauma, duration of symptoms, and mode of trauma if present. Every patient attending to emergency or out-patient department was asked about mode of trauma, presence of any other comorbidity, whether participating in any sports activity. A record book was maintained to enter all the details of the patients with emphasis on etiology of the tear.

Observations and Results

Age Distribution

S.No	Age(in years)	No. Of Cases	Percentage
1.	18-30	7	4
2.	31-40	21	12
3.	41-50	24	32
4.	51-60	70	40
5.	61-70	21	12
	Total	175	100

Gender Distribution

S.No	Sex	No. Of Cases	Percentage
1.	Males	63	36
2.	Females	112	64
	Total	175	100

Side Involved

S.No	Side Involved	No. Of Cases	Percentage
1.	Right	147	84
2.	Left	28	16
	Total	175	100

History of Trauma

S.No	Mode	No. Of Cases	Percentage
1.	Traumatic	91	52
2.	Non-Traumatic	84	48
	Total	175	100

Mode of Injury

S.No	Mode of injury	No. Of cases	Percentage
1.	Fall on outstretched hand	35	38.46
2.	Direct fall on shoulder	45	49.45
3.	Lifting of heavy object	7	7.69
4.	Fall of weight onto shoulder	4	4.39
	Total	91	100

Male:Female ratio in our study was 1:1.7

Right side was more commonly involved in our study.

Traumatic etiology was seen in 52% of the cases.

Indirect trauma to shoulder in the form of fall on an outstretched hand and lifting of heavy object accounted for 46.16% of cases and direct trauma to shoulder in the form of direct landing onto the shoulder or fall of a weight onto the shoulder accounted for 53.84% of cases.

The mean age in our series was 51.48 years with range from 18-75 years. In patients with traumatic history, mean age was 47.61 years with range from 18 to 60 years. In patients with no history of trauma, mean age was 55.66 years with range from 40 to 75 years.

Discussion

The present study was conducted in Post-graduate department of Orthopaedics, Bone and Joint Surgery Hospital, an associate hospital of Government Medical College, Srinagar from June 2015 to May 2018

The aim of this study was to determine the etiology of rotator cuff tears, whether traumatic or degenerative and also the mode of injury when present.

In our study, right shoulder which was the dominant arm in all cases was involved in 147 cases (84%) and left side in only 28 cases(16%).

Sugaya et al 2005,[6] compared the functional and structural outcome after arthroscopic full thickness rotator cuff repair in 80 patients. Dominant arm was involved in 77.5% of cases.

In our study, definitive traumatic incident as a precursor of symptoms was recognised in 91 cases (52%).

Michael E. Hantes et al.,[7] 2011 evaluated 223 patients with rotator cuff tear and found traumatic etiology in 39 cases(17.48%).

Sorensen AK et al.,[8] 2007 reported 50% cases in his study after trauma to shoulder after detailed history and proper clinical evaluation.

Most common mode of injury in our series was direct fall onto the shoulder accounting for 45 out of 91 traumatic cuff tears (49.45%). Indirect mechanism including fall on an outstretched hand and lifting of a heavy object accounted for 42 out of 91 traumatic cases (46.15%).

Sorensen AK et al.,[8] 2007 reported that in his study, 51% were injured by a direct trauma to the shoulder, 44% by an indirect trauma and 5% by a combined or unknown mechanism.

Conclusion

- The mean age in our series was 51.48 years with range from 18 to 75 years.
- Majority of the patients were females. Male to female ratio was 1:1.7 with 36% males and 64% females
- Right side (dominant arm in all) was involved in 84% patients and 16% patients had left side involvement.
- Definitive traumatic incident as a precursor of symptoms was recognised in 91cases (52%) while 84 cases (48%) had no history of trauma.

This implies that younger population are more likely to have a history of trauma while as in older population the tears are mostly degenerative. In patients with degenerative tears, the bone is usually weaker and in such cases the suture anchors are directly placed into the bone without prior drilling in order to get a stronger hold and prevent suture anchor back-out.

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