



DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF PATIENTS WITH ROTATOR CUFF INJURY-A RETROSPECTIVE STUDY

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ABSTRACT

Introduction: Shoulder pain is a common presenting symptom of patients visiting the Physical Medicine and Rehabilitation department and Rotator cuff pathology accounts for large majority of the cases.

Rotator cuff Injury can be clinically diagnosed using various special test and can be confirmed using Ultrasound or MRI scan. The pain and disability suffered by the patient depends on a number of factors including the age of the patient, activity level, job and the severity of injury. This study attempts to quantify the pain and disability of the patient with respect to demographic factors and severity of injury and also to check the sensitivity of special test for assessment of Rotator cuff Injury. **Materials & Method:** This is an Retrospective study conducted in the Dept of PMR, Govt Medical college, Trivandrum. In this study Retrospective data of 70 patients with Rotator cuff Injury is taken from departments records and entered into Excel sheet and analysis is done. Quantitative variable expressed as mean with standard deviation & qualitative variable as proportion.

Result: The mean age of the study population was 56.3 years although all age groups were affected, both males and females were equally affected and 64 percent of the study population being affected by partial tear of Rotator cuff Injury and the rest being complete tear. The pain and disability suffered by the patients with rotator cuff injury was high and about 47 % of the study population suffered severe disability to raise the Upper Limb. In this study only 30% of patients reported a history of trauma and 38 % of patients was affected by Diabetes Mellitus. Out of the whole study population 78.5 % of patients could be diagnosed with Rotator cuff Injury. **Conclusion:** Rotator cuff Injury can affect all age groups and trauma may not be the only cause for Rotator cuff injury. The Pain and Disability due to Rotator cuff Injury is very high especially while doing activities which require overhead movement of upper limb. Clinical examination and a battery of special test could help to diagnose Rotator cuff Injury in places which had no access to Ultrasound or MRI evaluation

KEYWORDS : Rotator Cuff Injury, Rotator Cuff Ultrasonography.

INTRODUCTION

Shoulder pain is a common presenting complaint of patient visiting Physical Medicine and Rehabilitation out patient department. One of the common cause for this is Rotator cuff pathology accounting for two third of the cases(1). The shoulder being a unique joint in that it compromises stability for mobility has a high chance of Injury. This can greatly affect the activities of daily living, vocational and avocational activities of the individual suffering. Rotator cuff consist of 4 muscles supraspinatus, infraspinatus, teres minor and subscapularis which help in the mobility of the shoulder joint. The supraspinatus helps to initiate abduction and acts as a dynamic stabilizer of the head of humerus in glenoid cavity by preventing the downward dislocation of shoulder joint, infraspinatus and teres minor act as internal rotator and also help to stabilize the head of humerus by opposing the upward pull of the deltoid and subscapularis act as internal rotator and helps to stabilize the anterior shoulder joint. The symptoms of rotator cuff pathology range from pain, range of movement restriction, weakness of muscles and disability. The severity of symptoms depends on a number of factors like the degree of tear, cause of injury, age of patient, job and the activity level of the patient.

The clinical assessment of Rotator cuff injury includes various special test which can be easily done in the outpatient department. This helps with the early diagnosis and treatment of the patient's condition. However, there is conflicting and sparse data regarding the sensitivity and specificity of the special test which are done(2). As there are multiple test for the diagnosis of Rotator cuff pathology and all of them cannot be performed in patient visiting a busy outpatient department we hereby use a combination of test namely Jobe test for rotator

cuff integrity, Speed test for long head of biceps tendinosis or tears and Hawkins Kennedy test for the assessment of impingement in patient and check their usefulness in diagnosis of Rotator cuff Injury.

The Hawkins Kennedy test(3) is performed by is passively positioning the upright patient's arm in 90° of flexion at shoulder and elbow. The tester then forcibly medially rotates the patient's shoulder. If this reproduces the patients pain then this is positive sign of subacromial impingement. Jobe's test(4) is one of the test which is described for checking of rotator cuff tear or tendinosis. This test is done in two stages Preliminarily, the tester evaluates the deltoid, with the patient's arm at 90° of abduction and neutral rotation. To evaluate supraspinatus, the arm is then moved into medial rotation (thumb pointing down) and 90° of scaption, where the patient is asked to isometrically resist a downward pressure applied by the tester. If the patient experiences pain it is a sign of supraspinatus impingement, if there is also associated weakness it is a sign of supraspinatus tear. Speed test(5) is a test which helps to assess the long head of biceps as well as the integrity of the glenoid labrum(SLAP lesion). In this test the patient flexes his or her upper limb against isometric resistance with the elbow extended and the forearm supinated and the test is positive if the patient localizes the pain to the bicipital groove.

The gold standard in the diagnosis of Rotator cuff injury is MRI but Rotator cuff pathology can be easily diagnosed using Ultrasonography in experienced hands. The site and severity of the rotator cuff tear and health of the rotator cuff can also be assessed. USG also has the advantage of being cheap, patient friendly and permitting dynamic evaluation of the

shoulder joint. Side to side comparison can also be made and assessment of fluid present at various sites can also be made.

Primary Objective

To do a demographic analysis of Patients with Rotator Cuff Injury visiting a Tertiary care Physical Medicine and Rehabilitation department.

Secondary objective

To check the usefulness of a combination of Speed test, Jobe's test and Hawkins Kennedy test in the diagnosis of Rotator cuff Injury.

MATERIALS & METHODS

Study Design

Retrospective, Analytical study.

Study Period

1 month after obtaining IEC clearance

Study Setting

Record based, conducted in the Department of Physical Medicine and Rehabilitation, Govt. Medical College, Thiruvananthapuram.

Study Participants

Patients with Rotator cuff Injury who visited the outpatient department during a 3-year period between November 2021 and November 2024 are selected from records available in Physical Medicine & Rehabilitation department. All subjects were above 18 years of age.

Sample Size

Sample size is 70 Rotator cuff Injury cases for whom data is available in the Dept. of PM, Government Medical College, Thiruvananthapuram who have also undergone Platelet Rich Plasma Injection for Rotator cuff Injury

Inclusion Criteria

- Patients who came to Dept of Physical Medicine and Rehabilitation, Govt. Medical College, Thiruvananthapuram with shoulder pain and diagnosed as Rotator Cuff Injury using Ultrasound shoulder
- Age more than 18 years

Exclusion Criteria

- Patients with history of systemic inflammatory diseases
- Patients with bleeding disorders

Study Variables

Sociodemographic variables like

1. Age

Table 1.

				SPADI pain score in percentage	SD	SPADI disability score in percentage	SD	SPADI Total score in percentage	SD
Total number of patients	70	M:F	34:36						
mean age of population	56.3			69.5	20.26	63.25	18.43	66.07	17.81
Standard deviation	10.5								
youngest age	16								
oldest age	77								
females	36								
males	34								
Partial thickness tear	45	M:F	22:23	67.62	20.37	60.66	18.92	63.47	19.17
Full thickness tear	25	M:F	12:13	72.96	19.99	67.92	16.87	70.76	14.22

Chart 2--Sex Ratio

Females	36
Males	34

Chart 2--Sex Ratio



2. Gender
3. Occupation
5. Comorbidities
6. Special clinical tests
7. Severity of tear using Ultrasonography.

Data Collection Tools

1. Semi structured proforma
2. Clinical examination.
3. Ultrasonographic evaluation of shoulder

Data Collection Procedure

After obtaining permission from Institutional Ethics Committee the data of patients who was diagnosed as Rotator cuff injury is taken from records available in the Dept of Physical Medicine and Rehabilitation and entered into excel sheet and analysis is done.

Data Management and Analysis

- Data will be entered into EXCEL sheet.
- Quantitative variables will be expressed as mean with standard deviation.
- Qualitative variables will be expressed as proportion. Analysis of data will be done with statistical software SPSS 25

Ethical Considerations

Privacy and confidentiality of the data collected from the records available in Department of Physical Medicine and Rehabilitation shall be strictly maintained throughout the study.

RESULTS

The Spectrum of Rotator cuff problems ranging from tendinopathy and tendinitis to complete tear is becoming a significant musculoskeletal issue in India especially with increasing age, changing lifestyle and increased physical activity.

The aim of this study is to find out the demographic and the clinical characteristic of patients with Rotator cuff Injury coming to outpatient of Physical Medicine and Rehabilitation department in a tertiary care centre. In this study 70 patients with Musculoskeletal Ultrasound proven Rotator cuff Injury were enrolled.

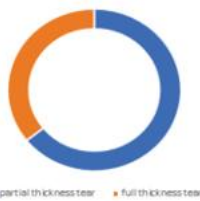
Mean age of the study population was 56.3 years with a standard deviation of 10.5, the youngest age of patient was 16 years and the oldest patient with rotator cuff injury in the population was 77 years. The sex ratio in this study was almost equal with 34 male patients and 36 female patients.

When considering the severity of the Injury 45 patients had partial thickness tear of Rotator cuff which was 64.3% of the study population and 25 patients had full thickness tears which was 35.7 % of the study population.

Chart 3-Severity of RCI

Partial thickness tear	45
Full thickness tear	25

Chart 3--Severity of Injury

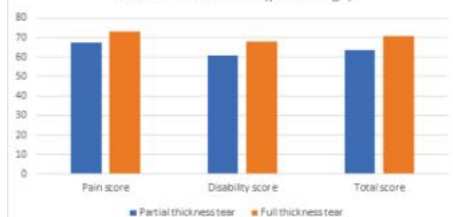


On comparing the SPADI score of patients with Rotator cuff Injury it was found that pain score of partial thickness tears was 67.62% as compared with pain score of 72.96 % of those with full thickness tears and when comparing the disability score of patients with partial thickness tears was 60.66% as compared with 67.92% for full thickness tears and the overall score of SPADI for partial thickness tear was 63.47% and full thickness tear was 70.76%.

Chart 4-SPADI Score (Percentage)

	Pain score	Disability score	Total score
Partial thickness tear	67.62	60.66	63.47
Full thickness tear	72.96	67.92	70.76

Chart 4--SPADI score(percentage)

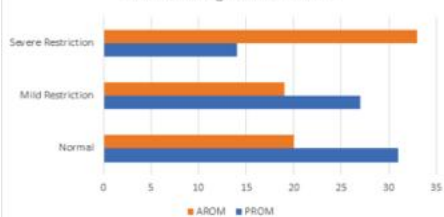


While checking Passive Range of movement(PROM) of patients with Rotator cuff Injury 14 patients had severe restriction which was about 20 % of the study population 27 patients had mild restriction and 31 patients had no restriction of movements of shoulder and on checking Active Range of Movements(AROM) 33 patients had severe difficulty which was 47 % of the study population, 19 patients had mild difficulty and 20 patients had full ability to raise the upper limb.

Chart 5- ROM Restriction

	Normal	Mild Restriction	Severe Restriction
PROM	31	27	14
AROM	20	19	33

Chart 5--Range of Movement

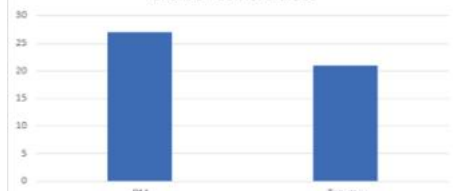


On considering comorbidities of patients only 21 patients reported Trauma history which was 30% of the whole study population and 27 patients has history of Diabetes Mellitus which was 38.5 % of the study population

Chart 6- Comorbidities

DM	27
Trauma	21

Chart 6--Comorbidities

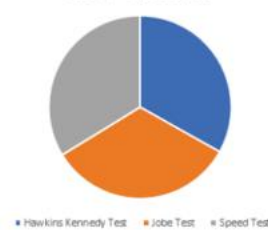


The special test done was Hawkins Kennedy test, Jobe's test and Speed test out of 70 patients Hawkins Kennedy test was positive for 55, Jobe's test was positive for 55 and Speed test was positive for 56 which was 78.5 % of the study population.

Chart 7- Special Test

Hawkins Kennedy Test	55
Jobe Test	55
Speed Test	56

Chart 7--Special test



CONCLUSION

The results of this study show that the mean age of the study population as 56.3 and the distribution of patients affected can be at almost any age group and in the younger age group it is due to trauma or sports injuries and the older age group it is due to degenerative causes. The sex distribution of the affected population in this study is almost equal. The incidence of Partial thickness tears was found to be more in this study. The Pain and Disability suffering in patients with Rotator cuff injury was found to be very high with the percentage being a bit more among patients with full thickness tear. Almost half of the study population has severe difficulty in raising the upper limb due to the Rotator cuff Injury. The effect of comorbidities was limited in this study. A significant number of patients could be diagnosed with clinical examination and a battery of special test being done. This shows the importance of clinical examination and special test battery for diagnosis of Rotator cuff Injury even in places without diagnostic aids like Ultrasound or MRI.

List of Abbreviations

- US – Ultrasonography
- RCI-Rotator cuff Injury
- SPADI-Shoulder Pain and Disability Index
- PROM-Passive Range of Movement
- AROM-Active Range of Movement
- DM-Diabetes Mellitus

REFERENCES

1. Murphy RJ, Carr AJ. Shoulder pain. BMJ Clin Evid. 2010 Jul 22;2010:1107. PMID: 21418673; PMCID: PMC3217726.
2. Hegedus EJ, Goode AP, Cook CE, et al. Which physical examination tests provide clinicians with the most value when examining the shoulder? Update of a systematic review with meta-analysis of individual tests. British journal of sports medicine. 2012;46(14):964-978. doi: 10.1136/bjsports-2012-091066.
3. Hawkins RJ, Kennedy JC. Impingement syndrome in athletes. American Journal of Sports Medicine 1980;8(3):151-8.
4. Jobe F W, Jobe C M. Painful athletic injuries of the shoulder. Clinical Orthopaedics & Related Research 1983;(173):117-24
5. Crenshaw AH, Kilgore WE. Surgical treatment of bicipital tenosynovitis. Journal of Bone & Joint Surgery - American Volume 1966;48(8):1496-502.