Original Article

Frequency of shoulder subluxation among stroke patients

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Objective: To determine the occurrence of shoulder subluxation in post stroke patients.

Methodology: This descriptive cross sectional study was conducted at PIMS Hospital Islamabad and included a sample of 101 stroke patients selected through convenience sampling technique. Clinical palpation for shoulder subluxation was used to regarding grades of subluxation. "Ritchie Articular Index for Paretic Shoulder Pain" was used for the data collection regarding shoulder pain. Data were analyzed using SPSS Version 16.0

Results: Out of 101 participants, 61(60.4%) were males 40(39.6%) females. Mean age was 56.62 years. Ritchie articular index showed that 28(27.7%) participants had no pain, 24(23.8%) had pain only, 20(19.8%) had pain with wince and 29(28.7%) had pain with wince and withdrawal. For shoulder subluxation, 60(59.4%) participants had no subluxation, 20(19.8%) had minimal subluxation and only 21(20.8%) had substantial subluxation of the shoulder joint. The most important finding was that there was significant positive co-relation between shoulder subluxation and shoulder pain.

Conclusion: The study showed a significant occurrence of shoulder subluxation in stoke patients and also a positive co-relation between shoulder pain and subluxation. (Rawal Med J 202;45:74-76).

Keywords: Frequency, Shoulder, Pain, Subluxation, Stroke

INTRODUCTION

Stroke is sudden development of neurological deficit, secondary to a vascular lesion causing central nervous tissue damage. Stroke can either be a "Complete Stroke" or a "Transient Ischemic Attack" (TIA). The general risk factors for stroke include hypertension, diabetes, contraceptive use, alcohol usage, polycythemia and atrial fibrillation.[1] Stroke is ranked as the 3rd most communal cause of death worldwide, being next to coronary artery disease and cancer.[2] The mortality and morbidity rate of stroke is higher in Asia as compared to Europe.[3-5] The under developed and developing countries comprise for more than 80% of stroke related mortality.[6] Stroke occurs in early ages of life among developing countries like Pakistan, because of which there is greater disability leading to heavy financial load.[7]

The alterations in the biomechanical stability and veracity of the shoulder joint or the gleno-humeral joint, resulting in a substantial gap which can be palpated between the bony prominence of the acromion process and the head of the humerus is known as shoulder subluxation.[8] A study from Karachi on 457 participants with stroke and/or TIA, reported an overall prevalence of 21.8% of shoulder subluxation. Females are at a greater risk of developing stroke in Pakistan.[9] Shoulder pain associated with stroke can lead to poor prognosis and can cause difficulty in performing activities of daily living (ADL), balance and mobility, and upper limb and hand function.[10.11] An overall incidence of shoulder subluxation ranges from 17-81%.[12]

Clinically, the subluxation of shoulder joint is measured and assessed using palpation techniques, which has proven to be both valid and reliable for post stroke patients with paretic shoulders and hemiplegia.[13] A systemic review concluded that the most commonly applied devices used for subluxation are the collar and cuff sling, and use of wheelchair accompanied with its attachments are considered effective.[14] Inspite of a lot of evidences supporting the prevalence of post stroke shoulder

pain, there is shortage of literature present on shoulder subluxation prevalence and incidence in stroke patient. This study provides an insight to the shoulder complications in the hemiplegic population and the occurrence of shoulder subluxation and relationship with post-stroke shoulder pain.

METHODOLOGY

This descriptive cross sectional study was conducted at PIMS Hospital, Islamabad and participants were included in the study via convenience sampling and a sample of 101 patients was calculated by using Rao soft software. Post stroke IPD (Indoor Patient Department) patients were included in the study, with age more than 20 years and stable vital signs from the last two days. Participants were able to tolerate sitting without dizziness for at least half an hour. All patients were oriented and responsive, and could follow commands. Patients with psychiatric issue, septic arthritis, dementia, coexisting physical deformity, amputation, history of shoulder subluxation prior stroke, recent history of shoulder injury or pain before stroke, post traumatic pain or fracture, spinal cord injury, severe co-morbidities and medical conditions were excluded from the study. An informed consent was obtained from all patients.

Clinical measurement procedure via palpation for shoulder subluxation was used to obtain data regarding grades of subluxation of the shoulder. Ritchie Articular Index for Paretic Shoulder Pain was used for the data collection regarding shoulder pain.

Statistical analysis: Data were analyzed using SPSS Version 16.0. Pearson's co-relation was used and $p<0.05$ was considered significant.

RESULTS

Out of 101 participants, 61(60.4%) were males 40(39.6%) females. Mean age was 56.62 years (Table). There was a positive co-relation between shoulder subluxation and shoulder pain, with Pearson's co-relation of 0.598 and a p-value of <0.05, thus the co-relation was significant.

Table. Shoulder pain and grades of subluxation.

Gender	**Frequency (%)**
Male	61 (60.4)
Female	40 (39.6)
Shoulder pain (Ritchie Articular Index)	
Variable	**Frequency (% Age)**
No pain	28 (27.7)
Complain of pain	24 (23.8)
Complain of pain with wince	20 (19.8)
Complain of pain with wince and withdrawal	29 (28.7)
Shoulder Subluxation Grades	
Variable	**Frequency (% Age)**
None	60 (59.4)
Minimal	20 (19.8)
Substantial	21 (20.8)

In terms of shoulder pain on Ritchie articular index, 28(27.7%) participants had no pain, 24(23.8%) had complain of pain only, 20(19.8%) had complain of pain with wince and 29(28.7%) participants had complain of pain with wince and withdrawal. For shoulder subluxation, 60(59.4%) participants had no subluxation, 20(19.8%) had minimal subluxation and only 21(20.8%) had substantial subluxation of the shoulder joint.

DISCUSSION

In our study, the age of the participants varied between 38 to 72 years with the mean age was 56.62. From a total of 101 participants, 61 (60.4) were males 40 (39.6%) were females.. Moreover the most important finding of the study was that the study showed a significant positive co-relation between shoulder subluxation and shoulder pain.

A study conducted in Bangkok to find the occurrence of shoulder subluxation in stroke patients and its association with shoulder pain showed that 37% patients had shoulder subluxation whereas only 19% had frequent episodes of shoulder pain.[15] Our study had 19.8% patients with minimal subluxation and 20.8% having substantial subluxation and a positive correlation between shoulder pain and subluxation.

Another study to determine the relationship between shoulder subluxation and shoulder pain in stroke patients included 24 participants concluded

that 20.8% had minimum subluxation and 16.6% had significant subluxation In this study Clinical measurement via palpation for shoulder subluxation and Ritchie Articular index for shoulder pain, both were found to be valid and reliable.[13]

A case control study included 107 stroke patients with shoulder subluxation, among which 48.6% patients had a positive significant correlation between shoulder subluxation and shoulder pain.[16] This is similar to the results of current study which also showed a positive co-relation between shoulder pain and subluxation.

Study limitations include small sample size for the conclusions to be generalized. Further research with a bigger sample size is needed to make the results more generalized.

CONCLUSION

The current study showed prevalence of shoulder subluxation in stroke patients similar to other studies. We found a positive co-relation between shoulder pain and subluxation.

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