



Research Article

PREVALENCE OF DE-QUERVAIN'S TENOSYNOVITIS IN PIANISTS

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ABSTRACT

Aim: to find the prevalence of de quervain's tenosynovitis in pianists

Background: De quervain's tenosynovitis is a disorder characterised by pain on the radial (thumb) side of wrist, impairment of thumb function and thickening of the ligamentous structure covering the tendons on the first dorsal compartment of the wrist. Motion analysis of the performance of scale passage demonstrated primarily flexion of MCP joint striking key and extension of PIP joint. It is caused by impaired function of abductor pollicis longus and extensor pollicis brevis.

Methodology: Prevalence study was conducted on both male and female pianists in various piano classes and music academy considering convenient sampling. 200 samples were assessed. Using Finkelstein's test both right and left hand of the pianists were assessed and readings were recorded.

Conclusion: The study concludes that there is high prevalence of de quervain's tenosynovitis in pianists according to the dominance

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INTRODUCTION

De Quervain's tenosynovitis is a disorder characterized by pain on the radial (thumb) side of the wrist, impairment of thumb function, and thickening of the ligamentous structure covering the tendons in the first dorsal compartment of the wrist. It is precisely defined as stenosing tenosynovitis of the first dorsal compartment. It is a relatively common, uncomplicated, and musculoskeletal disorder of the distal upper extremity¹. In this respect, repetitive strain injuries (RSI) are defined as cumulative trauma disorder resulting from repetitive, forceful or awkward movements³.

Motion analysis of the performance of the scale passage demonstrated primarily flexion of the metacarpophalangeal (MCP) joint at the striking key and extension at the proximal interphalangeal (PIP) joint playing of the chord passage required repeated flexion predominantly at the wrist joint. The maximum extension angle of the wrist in scale was significantly smaller than that in chord. However, the maximum extension angle of the MCP and PIP joints in scale were much larger than those in chord, and the maximum flexion angle of the distal interphalangeal (DIP) joint in scale was much larger than that in chord.² It is caused by impaired gliding of the tendons of the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles. These musculotendinous units control the position and orientation, force application and joint stability of the thumb.

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The impaired gliding is believed to be as a result of thickening of the extensor retinaculum at the first dorsal (extensor) compartment of the wrist, with subsequent narrowing at the fibro-osseous canal.³⁻⁷ Severe cases of DQST have been associated with extensor retinaculum thickening that is three to four times greater than normal⁴.

Chronic inflammatory tendon diseases in athletes are frequent, and they often result from modifications in normal kinematics of a tendon associated with a patient's anatomical determinants⁵.

Need of Study

Many researchers have been done to find musculoskeletal disorders in musicians such as shoulder pain wrist pain etc. there are also studies done in which there is co-relation of de quervain's and musicians. There has been research done on de quervain's tenosynovitis in various countries. But to our knowledge very few studies have been conducted in India with respect to such injuries. Hence this study has been conducted.

Aim and Objective of the Study

Aim

To study prevalence of de quervain's tenosynovitis in pianists.

Objectives

To find out the prevalence of de quervain's tenosynovitis in pianists using Finkelstein's test.

Review of Literature

Maryam Ali, Muhammad Asim, Syed Hasan Danish, Farah Ahmad, AfsheenIqbal, 5 and Syed Danish Hasan conducted study on, Frequency of De Quervain’s tenosynovitis and its association with SMS texting. Fritz De Quervain was the first in 1895, who defined De Quervain’s tenosynovitis as a painful complain of the wrist as stenosing tenosynovitis of thumb abductors around the radiostyloid process. With the new occupational and professional demands the prevalence of this condition is also increasing gradually. The activities which involved the repeated thumb pinching and wrist movement can be the consequence of this painful condition. In the literature search this condition has various synonyms, including De Quervain’s disease, first dorsal compartment tenosynovitis, texting tenosynovitis, Blackberry Thumb and Washer Woman’s Sprain,. De Quervain’s tenosynovitis is triggered by a stenosing inflammation of the tendon sheath in the first dorsal compartment of the wrist. The patients may experience the associated symptoms beside the pain is dysesthesias, such as numbness, tingling, burning, and cramping. The most standard finding in De Quervain’s tenosynovitis is a positive Finkelstein test.

H. Ralph Schumacher Jr, MD; Bonnie B. Dorwart, MD; Oksana M. Korzeniowski, MDconducted study on Occurrence of De Quervain's Tendinitis During Pregnancy. Six women developed De Quervain's tenosynovitis during pregnancy. Onset was never before the fifth month. Two patients also had carpal tunnel syndrome. In two otherwise untreated patients, tendinitis resolved only after discontinuation of nursing. We discuss the possibility of association with hormonal changes occurring during pregnancy.

Reinstein L conducted study on de Quervain's stenosing tenosynovitis in a video games player. An analysis of the biomechanics of video games playing indicates that grasping the joystick controller produces tension on the abductor pollicislongus (APL) and extensor pollicisbrevis (EPB) tendons, and that video games playing requires many rapid, repetitive thumb and wrist movements which stress the APL and EPB tendons. It is concluded that prolonged playing with video games should be considered as an etiologic factor in patients with de Quervain'sstenosing tenosynovitis.

Costantino Rossi, MD, Paolo Cellocco, MD, Enrico Margaritondo, MD, Francesco Bizzarri, MD, Giuseppe Costanzo, MD conducted study onDeQuervain Disease in Volleyball Players. Chronic inflammatory tendon diseases in athletes are frequent, and they often result from modifications in normal kinematics of a tendon associated with a patient's anatomical determinants. De Quervainstenosing tenosynovitis is an inflammatory disease of tendons of the first dorsal compartment of the wrist. There is no literature about this disease concerning professional volleyball players.This study shows that increased training time and consequent microtrauma associated with professional volleyball activity can increase the likelihood of de Quervain disease.

MATERIAL AND METHODOLOGY

Study Design

Type of study – prevalence
 Duration of study – 1 year
 Location – metropolitan city

Sample Design

Sample size – 200
 Sample population – pianists
 Sampling – convenient sampling

Materials Used

chair
 Pen
 stool

Selection Criteria

Inclusion Criteria

Both male and female pianists
 Subjects willing to participate
 Playing experience of more than 3 years

Exclusion Criteria

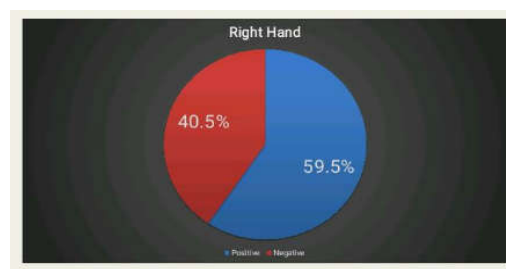
Degenerative conditions of hand
 Neurological condition of hand
 Recent fractures of wrist and hand complex<6months
 Open wounds
 Deformity of hand and wrist complex
 Age more than 60 years

Procedure

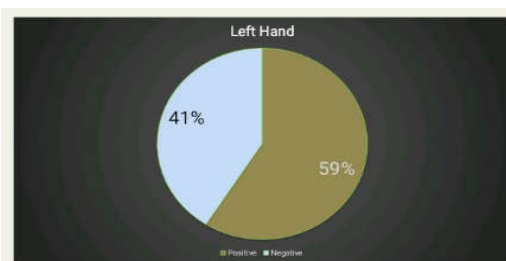
Screening of participants will be done as per the inclusion criteria. The procedure of the study will be explained to the participants in detail. A written consent will be taken from the subject in the language best understood by them.The individual is explained about the de uervain’s tenosynovitis and the test which will be performed

The Test is Performed as Follows

- Patient’s position-in sitting on chain with elbow flexed and forearm in midprone position
- Therapists position-siting on the lateral side of patient
- Then the patient is asked to make fist with thumb inside and then take the wrist down(ulnar deviation)and then passively overpressure is given by the thaerapist.
- Test is performed on both the hands and findings are noted.



The above graph shows there is high prevalence in right hand



The above graph shows there is high prevalence in left hand

DISCUSSION

The present study aimed to find out the prevalence of de quervain's tenosynovitis in pianists. The present study documents that both right and left hand was involved based on the dominance. Right hand positive (59.9%). Right hand negative (40.5%) left hand positive (59%) left hand negative (41%) Age specific prevalence of de-quervain's was found to be higher in active young population. The study by Maryam ali *et al.* stated that due to sms more than 50 per day n increasing speed of texting, the students suffer from pain.

The prevalence of de-quervain's tenosynovitis is increasing world-wide and this is likely to be associated with an increasing poor activity pacing the malalignment while playing piano the factors contributing for de quervain's tenosynovitis may attribute to sms texting or playing video games, household works lack of activity pacing, poor positioning of the hand and wrist.

The findings of this study suggest that there is deficit in both right and left hand based on the dominance indicating more involvement of the inflamed injury to the tendons abductor pollicis brevis and extensor pollicis longus William J Dawson *et al.* (sept 2002) stated that of 167 population of the pianists, 54.7% developed strains, 17.4% inflammatory conditions.

Naotaka Sakai *et al.* (dec 1996) stated that amongst two hundred professional pianists tenosynovitis or tendinitis included de-quervain's disease was diagnosed in japan. The exact mechanism underlying the observed deficit is Motion analysis of the performance of the scale passage demonstrated primarily flexion of the metacarpophalangeal (MCP) joint at the striking key and extension at the proximal interphalangeal (PIP) joint. In contrast, playing of the chord passage required repeated flexion predominantly at the wrist joint. The maximum extension angle of the wrist in scale was significantly smaller than that in chord. However, the maximum extension angle of the MCP and PIP joints in scale were much larger than those in chord, and the maximum flexion angle of the distal interphalangeal (DIP) joint in scale was much larger than that in chord. These results showed that while there are many variations of finger motion and position in playing the piano, specific joints can be identified that are affected to a greater extent in repetition of motion Instrumental musicians in general, and pianists in particular, are also a special risk group for repetitive motion injuries (Rozmaryn, 1993, Yassi, 2000)

CONCLUSION

The study concludes that there is high prevalence of de quervain's tenosynovitis in pianists according to the dominance.

Clinical Implications

An implication of the findings of the present study would be to design an exercise regime for de quervain's tenosynovitis in pianists and ergonomic advice.

Limitations

Small age group range

Suggestions

Study can be done on larger population

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