ORIGINAL ARTICLE

Seasonal variations and occupational risk factors: Analysis of 460 patients of de Quervain's tenosynovitis

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Abstract

Objectives: The objective of this study was to find out the seasonal variation in incidence of de Quervain's disease and its association with various occupations.

Study design: Descriptive retrospective study

Place and duration of study: The study was conducted at Department of Orthopaedic and Spine Surgery, Hayatabad Medical Complex, Peshawar and Khyber Medical Centre, Dabgari Garden, Peshawar from January 2007 to December 2019.

Material and Methods: We evaluated our data of patients with diagnosis of de Quervain's tenosynovitis from 2007 till 2019. Patients with complete demographic data were included in the study. The findings were analyzed and risk factors and seasonal variation in disease occurrence was analyzed.

Results: Complete record of 460 patients was available. Females were 409 and 51 were males in a ratio of 1:8. The average age was 43 years. Most were housewives followed by teachers, doctors and manual laborers. Most cases presented in winter months, although there were peaks in summer as well.

Conclusions: de Quervain's tenosynovitis is more common in housewives and manual workers. The presentation is more in winter months.

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Introduction:

De Quervain tenosynovitis is a condition which involves tendon entrapment affecting the first dorsal compartment of the wrist.[1,2,4] There is thickening of the tendon sheaths of ist dorsal compartment of wrist located along the radial styloid. There is characteristic pain which is exacerbated by thumb movement and radial and ulnar deviation of the wrist.[2,5,6]

The exact cause of de Quervain tenosynovitis is not clear. This has been attributed to myxoid degeneration with fibrous tissue deposits and increased inflammation of the synovial lining. There is thickening of the tendon sheath, resulting in painful entrapment of the abductor pollicis longus and extensor pollicis brevis tendons.[3,17] It is associated with repetitive wrist motion, specifically motion requiring thumb radial abduction and extension and radial deviation. This is the basis of the Finkelstein's test. The classic patients are female manual workers or mothers of young infants.[6,15,22]

The prevalence of de Quervain tenosynovitis ranges 0.5% in males and 1.3% in females with peak prevalence in their forties and fifties. Recently use of smart phones with repeated use of thumb for texting has been reported to be associated with this disease.[16,25,26] Common association is with other work related musculoskeletal disorders of upper limb like, medial or lateral epicondylitis.[14] Bilateral involvement is often reported in new mothers or child care providers.[22]

The first dorsal compartment of the wrist contains the abductor pollicis longus and exten-

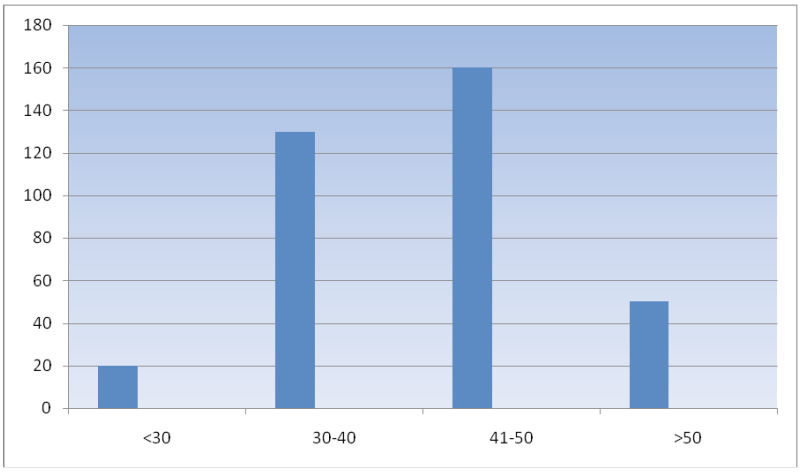

Figure 1: *Age Distribution of patients*

sor pollicis brevis tendons. These tendons pass through a fibrous tunnel passing over the radial styloid and under the extensor retinaculum. The tendons are at risk for entrapment at the narrow space when subjected to acute trauma or repetitive motion.[15]

Patients present with wrist pain which is worsened by thumb and wrist motion. Tenderness overlying the radial styloid is usually present, and fusiform swelling in this region may also be noticed. The pathognomonic provocative Finkelstein test, in which the thumb is flexed and held inside a fist, and patient actively deviates the wrist to ulnar side, causes sharp pain along the radial wrist at the first dorsal compartment.[5,8,15] The diagnosis of de Quervain tenosynovitis is a clinical.[3,14] Radiographs are usually done to exclude other less common pathologies.[4]

Mild cases of de Quervain tendinopathy may resolve spontaneously. Others may need splinting, systemic anti-inflammatory and corticosteroid injections.[1,6,7,18]

Corticosteroid injection has been reported to provide excellent results by various researchers. Injection is performed into the tendon sheath about 1 cm proximal to the radial styloid where the tendons are palpable. Symptomatic relief is achieved in up to 50% of patients with a single injection.[3,6,7,18] A second injection may increase the response to 80% of patients. Complications of steroid injection include fat and dermal atrophy and hypo-pigmentation.[5,18]

Surgical release of first dorsal compartment is needed if conservative treatment fails.[8-10,20] Surgery is usually done as day case. The procedure is done under local anesthesia and under tourniquet. This is performed through an approximately 2cm transverse or vertical skin incision over the first dorsal compartment. It is necessary to avoid injury to the branches of the superficial radial sensory nerve. The ligament over the first dorsal compartment is exposed. The dorsal margin of the sheath is then sharply incised. Sub compartments, if present, are identified and incised. Once all sub-compartments are released, the skin is closed, and a bulky, soft dressing is applied and early mobilization performed.[8,10,11,19,22,27]

The purpose of this study is to know about seasonal variations in presentation of disease and to identify the professional pre-disposition to disease. Professional risk factors and female gender is considered known in causation but seasonal variation has not been found a major factor. For this purpose we have analyzed our data from 2007-2019.

Material and Methods:

The study period was from January 2007 to December 2019. All patients were seen in outpatient in two settings, Khyber Medical Centre Dabgari Garden, Peshawar and Hayatabad Medical Complex Peshawar. After exclusion of incomplete data 460-patients were available for analysis.

Results:

During the study period 460 patients were seen with the diagnosis of de Quervain tenosynovitis. 409 were females and 51 were males. The female male ration was 8:1. The average age of patients was 43 years. Very few patients were below 30 or above 50 years (fig I). this disease was found to be more common in females who are housewives or laborers. Other professions which were commonly associated with de Quervain's tenosynovitis are teaching, medical profession and

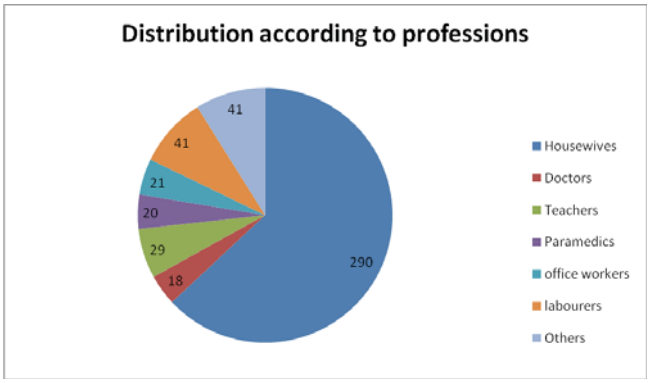

Figure 2: *Profession (n= 460)*

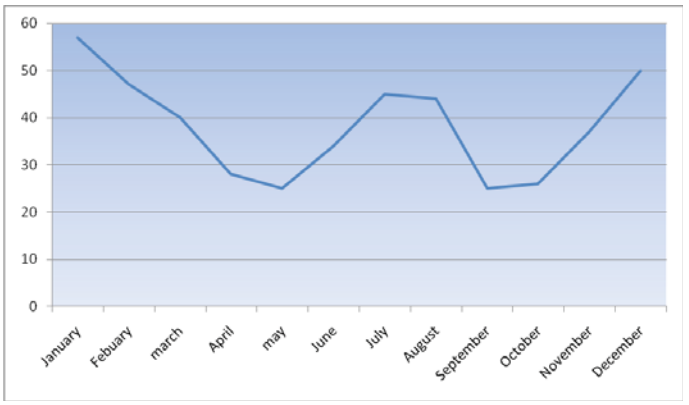

Figure 3: *Seasonal variation of de Quervain's Disease*

others(fig II).

A definite pattern of seasonal variation was noted. The peak of presentation was seen in winters, in months of January and December. Another peak was also observed in summers but to a lesser degree. So the highest occurrence was noticed in extremes of temperature (fig III).

Discussion:

De Quervain tenosynovitis is a common work related musculoskeletal disorder of upper limb as there are numerous studies on various aspects from its incidence to risk factors and results of various treatment options from analgesics to surgical release. The most consistent risk factor reported by all authors is female sex.

In our study female to male ration was 8:1 which is slightly lower than previous studies.[9,11] In our own study published in 2003 the ratio was 9:1.8 some recent studies are showing change of the ratio due to increased use of smart phones as shown in a study by Samuel DJM et al.[25] In a recent study in Karachi by Nasim A et al the ratio was almost 2:1 but they included mild cases also.[26]

The average age of our patients was 43 which is slightly higher than our previous study. But comparable with most other studies.[1,6,8] Satoshi et al in their study showed that the disease was more common in forties and fifties which is similar to our study.[3]

The risk factors included female housewives who are involved in domestic manual work. Among males the manual laborers were mostly involved. Significant number of health care workers and doctors were also the victims. 7-among them were ultrasonographers. We had no data about their use of smart phones.

The most significant finding over the study period of 13-years was seasonal variation noted in winters and summers. The peaks were noted in months of December and January. Another peak was noted in the months of July and August. There are not many articles on seasonal variation of this disease. In fact one study by Warrender WJ et al on seasonal variation of upper limb disorders does not show any difference in case of de Quervain,s disease. In another study by Saeed MA et al the authors noted significant increase in prevalence of carpal tunnel syndrome in Pakistani population.[27,28]

One reason which could explain the peak in winters is overall increased in number of all patients in Peshawar due to migration of population from peripheral districts and Afghanistan due to extreme weather conditions in those areas. But the other peak in summer cannot be explained. Is it related to more manual work in summers or has it anything to do with barometric pressure or humidity. This needs further studies.

Conclusion:

We conclude that de Quervain's tenosynovitis is more common in housewives and manual workers. The presentation is more in winter months.

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Role and contribution of authors:

Dr Israr Ahmad, collected the data, references and did the initial writeup.

Dr Alamzeb Khan, collected the data, references and helped in introduction writint

Dr Zeeshan Khan, collected the references and helped in discussion writing

Dr Salik Kashif, collected the data, references and helped in interpretation of data.

Dr Mohammad Saeed, collected the references and helped in result and discussion writing

Dr Muhammad Arif Khan, critically review the article and made the final changes.

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