SHORT REPORT

Prevalence of De Quervain disease in infant caregivers and its association with risk factors

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Abstract

De Quervain's disease (DQD) is commonly reported in mothers during pregnancy up to delayed postpartum period. A cross-sectional study was conducted to assess infant caregivers who visited the paediatric outpatient department or vaccination centre in two hospitals of Lahore, during the months of May and June, 2021. A total of 190 subjects were interviewed directly and assessed by applying Finkelstein's test on both hands. Data was collected using Numeric Pain Rating Scale (NPRS) and Patient Rated Wrist Evaluation (PRWE) from positive subjects. They were asked to report their pain and difficulty level of the affected hand with worsened symptoms. The results exhibited 26.8% prevalence of DQD in a sample size of 190. Infant's age, lifting frequency and hand dominance were proved significant risk factors. However, caregiver's age, history of wrist pain, infant weight and relationship with infant were proved insignificant. Mean PRWE pain and functional scores were 23.14±7.72 and 18.53±6.09, respectively.

Keywords: De Quervain disease; infant; caregivers; prevalence; risk factors.

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Introduction

De Quervain disease (DQD) is a disorder depicted by tendon capture in the wrist's first dorsal compartment. The two tendons, i.e. Abductor Pollicis Longus (APL) and Extensor Pollicis Brevis (EPB) pass through this compartment and form a radial border of anatomical snuffbox.[1] It is the second most common entrapment tendinitis of the wrist. Patients complain of pain at the radial side of the wrist, which is aggravated by thumb movement and wrist's radial and ulnar deviation. Pain radiates into the distal arm, hand, and thumb with swelling and tenderness in the area.[2]

Continued strain and friction by the repetitive thumb and wrist motions leads to APL and EPB thickening and the osteo-ligamentous tunnel, an innate bottleneck in the wrist becomes shortened, resulting in inflammation, further stenosis, and discomfort and thus restrict the normal gliding of the sheath.[3] Myxoid degeneration is the histopathological cause irrelevant of the postpartum period.[4]

Lifting, reaching, holding, and pinching are all predisposing movements, particularly when associated with wrist radial or ulnar deviation. The necessity to hold and support the baby's head and grabbing infants and children by inserting a drawn out finger and thumb under their axilla are common mechanisms.[5]

Diagnosis is made primarily by physical examination. A sharp, intense pain following the phased approach of Finkelstein's test manoeuver confirm the diagnosis. The patient draws out his/her hand, letting gravity to move the wrist in ulnar deviation. The wrist can then actively be deviated towards the fifth digit followed by ulnar deviation of the wrist to a greater extent forced by the clinician. As a final step, the patient's first digit is passively flexed by the clinician into his/her palm.[6]

The prevalence of DQD is 0.5% in men and 1.3% in women with a bimodal distribution with the majority of patients in their 50s and 60s, and in women who are postpartum or lactating in their 30s.[5,6] However, paediatric nurses and grandmothers report similar phenomena following exhaustive care of infants, indicating a mechanical factor involvement. When the child is lifted less frequently, spontaneous resolution usually occurs in postpartum females and child care providers reporting bilateral wrist discomfort.[5]

To the best of our knowledge, no study has determined the prevalence of baby wrist in infant caregivers. Thus, it will be the first study to set out the prevalence and risk factors of DQD in primary and secondary infant caregivers. Often caregivers seek ineffective treatment, unaware of the causative agents which leads to progressive worsening of the condition. The results of this study will raise awareness about a particular wrist condition that will avert misdiagnosis, prevent mismanagement and aid in swift recovery.

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Materials and methods

A cross-sectional study was conducted to approach infant caregivers who visited the paediatric outpatient department or vaccination centre in two hospitals i.e. University of Lahore Teaching Hospital, Lahore, and Life Care Trust Hospital, Bahria Town, Lahore, during May and June, 2021. Approval from ethical committee of University of Lahore was acquired before ritualistic starting point of research. Sample size was calculated using Danial sample size formula[7] with 95% Confidence interval (CI), 0.59 anticipated population proportion (P) and 0.07 absolute precision required (d). The sample was raised using non-probability convenience sampling technique.

An open permission letter for data collection was acquired from the head of department before initiating data collection. The interviewed participants were female caregivers with age ≥18 years.[8] They were involved in care of infants aged between 1 to 12 months.[9] Detailed history was taken. Subjects with any other musculoskeletal condition of the wrist, wrist pain related to pregnancy or systematic comorbidity were excluded.

An informed written consent was taken from the study participants. One hundred and ninety participants were engaged in direct interview and physical examination was done by applying phased approach of Finkelstein's test on both hands (Figure).[10] Data was collected using 11-point Numeric Pain Rating Scale (NPRS) and 10-point Likert scale of Patient Rated Wrist Evaluation (PRWE) from positive subjects.[8] PRWE is a 15-item questionnaire with two subsections, i.e. pain subscale and function subscale. Subjects were asked to report their pain and difficulty level of the affected hand with worsened symptoms. High scores represent greater pain intensity and difficulty. Questions related to risk factors and treatment seeking behaviour were validated through previous literature.

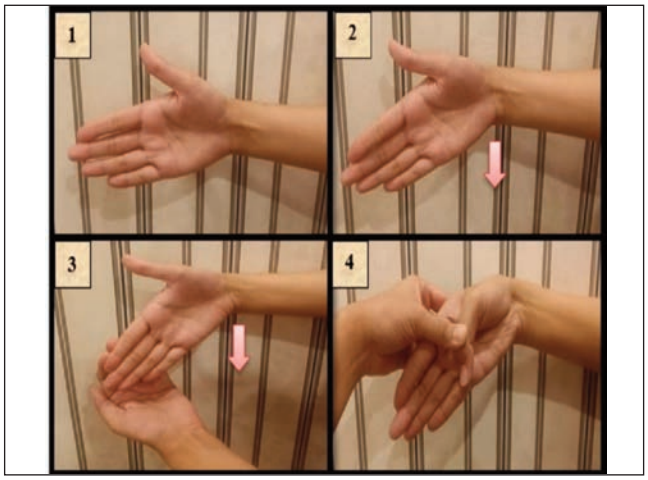

Figure: Phased approach of Finkelstein's test.

After collection, the data was analysed using IBM SPSS statistics 21.

Results

The analysis of the study indicated 26.8% prevalence of de Quervain disease in caregivers of infants with mean age of 7.08±3.173 months. Of the 190 participants, 144 (75.8%) were mothers and 46 (24.2%) were mother's helpers, guardian, nanny, governess or day care provider, etc. Female caregivers with a mean age of 28.54±7.54 participated in this study. The mean age and mean weight of the infants was 7.08±3.173 months and 7.16±1.84 kg, respectively. Finkelstein's test was performed on each participant. Fifty-one (26.8%) cases who had pain on the thumb side of the hand reported positive test results, while 139 (73.2%) gave negative test results. Among 51 diagnosed cases, 36 (70.5%) were mothers and 15 (29.4%) were secondary infant caregivers.

Only 10 (19.6%) caregivers sought treatment for their wrist condition; of these 6 caregivers self-medicated themselves, 2 caregivers sought Physical Therapy treatment, 1 took

Table: Cross tabulation of Demographic data stratified by disease positivity.

	Total n=190	**De Quervain's Syndrome** [n (%)] **Yes** 51 (26.8)	**No** 139 (73.1)	***p*-value**
Caregiver's age (years)				0.74
≤19	4 (2.10)	2 (3.92)	2 (1.43)	
20 t0 29	137 (72.10)	35 (68.6)	102 (73.3)	
30 to 39	33 (17.36)	11 (21.58)	22 (15.8)	
40 to 49	9 (4.73)	2 (3.92)	7 (5.03)	
50 to 59	6 (3.15)	1 (1.96)	5 (3.59)	
≥60	1 (.52)	0	1 (0.71)	
Infant age (months)				0.00*
1 to 3	33 (17.3)	2 (3.92)	31 (22.30)	
4 to 6	53 (27.8)	26 (50.98)	27 (19.43)	
7 to 9	50 (26.3)	15 (29.41)	35 (25.18)	
10 to 12	54 (28.42)	8 (15.6)	46 (33.09)	
Infant weight (kg)				0.17
3 to 5	41 (21.57)	9 (17.64)	32 (23.02)	
6 to 8	106 (55.79)	34 (66.67)	72 (51.80)	
9 to 11	43 (22.63)	8 (15.69)	35(25.18)	
Relationship with infant				0.31
Mother	144 (75.79)	36 (70.58)	108 (77.69)	
Other	46 (24.21)	15 (29.41)	31 (22.30)	
Previous hx of wrist pain	45 (23.68)	15 (29.41)	30 (21.58)	0.26
Lifting Frequency	0.00*			
Never	13 (6.84)	0	13 (9.35)	
Rarely	71 (37.37)	0	71 (51.08)	
Often	76 (40)	29 (56.86)	47 (33.81)	
Always	30 (15.79)	22 (43.14)	8 (5.76)	
Hand Dominancy	n=51[1]		**Affected hand**	0.02*
		Right	Left	Both
Right	45 (83.34)	31 (68.89)	6 (13.33)	8 (17.77)
Left	6 (11.76)	2 (33.33)	0	4 (66.67)

[1] Selective case analysis i.e deqervain disease = Yes. * ; $p < 0.05$.

allopathic medicine, and 1 used herbal medication to get rid of the pain.

Out of 51 (26.8%) diagnosed cases, 19 (37.3%) reported mild pain, 13 (25.5%) reported moderate pain and 19 (37.3%) reported severe pain on the radial side of the hand. Mean PRWE pain and function scores were 23.14±7.72 and 18.53±6.09, respectively. The mean of total PRWE score was 41.67±12.07 with minimum score of 12/100 and maximum score of 74/100.

Right hand was dominant in 45 (88.2%) caregivers and left hand was dominant in 6 (11.8%) caregivers. Bilateral pain was reported in 12 (23.5%) cases with a hand dominancy ratio of 2:1.

Association of seven risk factors with de Quervain disease was then evaluated. Infant age (p=0.00), lifting frequency (p=0.00), and hand dominancy (p=0.02) were proven significant. However, relationship with the infant (p=0.31), caretaker's age (p=0.74), infant's weight (p=0.17), and history of wrist pain (p=0.26) were insignificant (Table).

Conclusion

De Quervain disease is not confined to pregnancy and postpartum. Any caregiver who frequently lifts and holds the baby can develop this condition.

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Conflict of interest: None.

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Author Contribution: