

Parent's Awareness and knowledge on testicular torsion : A cross-sectional study

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Introduction

Testicular torsion is one of the common surgical emergencies that present to the casualty surgical ward at Teaching Hospital Peradeniya. Here, twisting of the spermatic cord structures leads to testicular ischaemia and severe pain in the scrotum. This is often accompanied by nausea and vomiting. If diagnosed rapidly, testicular torsion can be treated surgically by untwisting the testis and fixing the affected testis within the scrotal sac. This process is surgically known as orchiopexy.

Testicular torsion occurs in 1 per 4000 male patients who are less than 25 years [1] and rarely seen in patients older than 35 years [2]. There is bimodal occurrence in children: a small peak in neonates and a larger peak in peripubertal children [3].

Testicular salvage is dependent on timely diagnosis and management. When testicular torsion is identified and treated within 6 hours of onset, there is a greater than 90% chance that the testicle can be untwisted and saved. However, the testicular salvage rates drop below 10%, if surgical management is delayed beyond 24 hours [4] [5].

Unfortunately, studies have demonstrated that in 30–50% of cases, surgical interventions led to the removal of the affected testis (orchiectomy) due to irreversible ischemic damage [6] [7]. Considerably, for these patients, the most significant delays in care have occurred before hospital arrival [5]. Studies have shown that most parents and male children were unaware of the significance of seeking urgent medical evaluation for scrotal pain, and this may delay the treatment for a testicular torsion [8] [9] [10].

As a result, raising widespread awareness of testicular torsion appears to be critical for timely intervention and saving the testis. Our study mainly seeks to determine

Materials and Methods

Study Design and Settings

This is a cross-sectional study conducted from December/2023 to September/2024 at Teaching Hospital Peradeniya. Our hospital is a tertiary care hospital with a bed strength of about 900. The hospital treats annually about 70,000 to 80,000 patients in wards and about 350,000 patients in the outpatient department. About 300,000 patients receive medical care from clinics conducted in the hospital annually. The data for the study was collected from the urology and general surgical clinics of the hospital.

Sampling Strategy

Required number of participants (sample size) was calculated using following formula.

$$n = \frac{Z^2 P(1-P)}{d^2}$$

where n = Sample size
 Z = Z statistic for a level of confidence
 P = Expected prevalence or proportion
 d = Precision

Here, we used 19% as the expected prevalence based on the study by Fahad A. Alyami et al [11]. The Z value was taken as 1.96 at a 95% confidence interval. As well, a 5% acceptable precision ($d = 0.05$) was applied. In order to increase the power of our study, we decided to take an additional 10% increment in the study population. So, the final estimated sample size was 260.

Inclusion, and Exclusion Criteria

We invited all the parents of male children who attended urology and general surgical clinics at Teaching Hospital Peradeniya to participate in the study, irrespective of their age and educational background. Parents with only female children, parents whose children suffered from testicular torsion, and patients with disabilities and an inability to communicate were excluded from the study.

Ethical clearance and Data Collection Method

I Finally, we obtained the necessary permissions and ethical clearance from the “Ethical Review Committee—Teaching Hospital Peradeniya.”

The sampling instrument consisted of an “interviewer-administered questionnaire” with multiple components. The questionnaire was based on a study conducted at the University of Nebraska Medical Center by Abby Taylor et al [12]. We used Sinhala, English, and Tamil versions of the questionnaire. A pre-test was conducted on ten respondents, and the problems were discussed, and any necessary changes were made after discussing with the supervisors. We initially notified the selected parents about the study and received their informed consent. Then we asked the invited parents to complete the questionnaire.

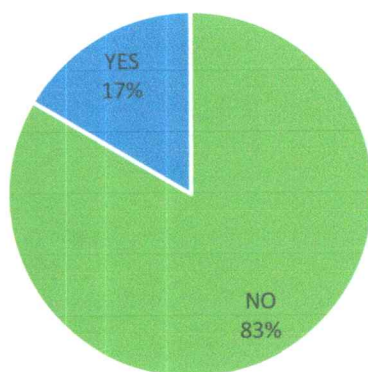
Data Analysis

IBM statistical pack for social sciences (SPSS, V.23) was used for data entry, coding, and analysis.

Results

Of the 260 parents, the majority of 217 parents (83.5%) were unaware of Testicular torsion, and only 43 (16.5%) were aware of testicular torsion. (Figure 1)

Fig.1 : Awareness of Testicular torsion



Of the 43 parents who are aware of testicular torsion, 20 respondents (46.5%) were males, and 23 respondents (53.5%) were females. (P = 0.435)

Considering the majority of the parents who were aware of testicular torsion, the source of knowledge had been a doctor (11 parents; 25.5%). In the others, it was a family member or a friend (21%), the TV or radio (16%), their own training (13.9%), the internet (13.9%), and the newspapers (9%) in the descending order.

Most parents aware of testicular torsion were between the ages of 30 and 59. (P = 0.435). (Figure 2)

Fig 2. Awareness of testicular torsion in relation to the age of the parents

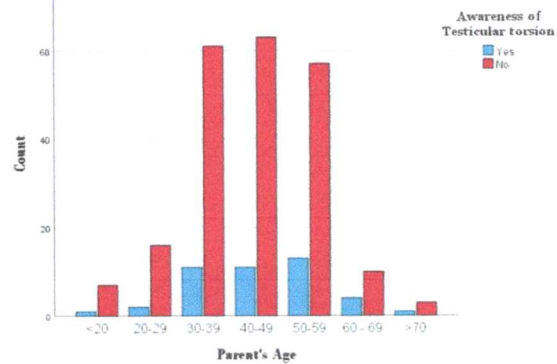
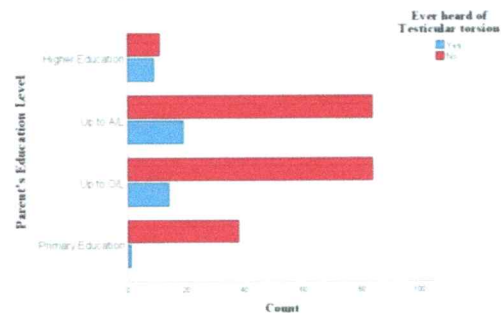


Figure 3 shows the relation between awareness of the testicular torsion and the patient’s educational level. Considering the parents only with primary education, out of 39 parents, only one (2.6%) was aware of testicular torsion, and 38 parents (97.4%) were unaware of the condition. However, when it comes to the higher education group, out of 20 parents, 9 parents (45%) were aware of testicular torsion, and 11 parents (55%) were unaware of the condition. This means a relatively higher number of parents were aware of testicular torsion when their educational status became improved. (P = 0.001)

Fig 3. Awareness of Testicular torsion in relation to Parent's Educational level



The other important thing to highlight is that in this study, 36 parents worked in the health sector, but 50% of them were not aware of testicular torsion.

The following figure (Figure 4) shows the parents' responses to their children's scrotal pain. The majority had responded that they would immediately take the child to the hospital (141 parents; 54.2%) or contact a doctor (97 parents; 37.3%). Only 22 parents (8.5%) responded that they would wait for the symptoms to resolve. In this group of 22 parents, 9 parents (40%) responded that they would wait less than one hour for the symptoms to resolve (Figure 5), 8 parents 1-3 hours (36.4%), 3 parents 3-6 hours (13.6%), and only 2 parents would wait more than 6 hours (9%).

Fig 4. Parent's response to scrotal pain

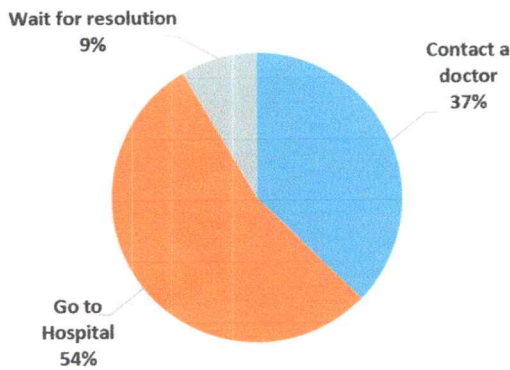
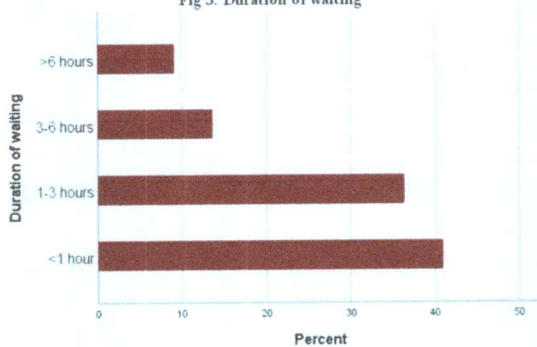


Fig 5. Duration of waiting



Of all the parents, 16 (6.2%) had discussed with their sons what to do if they develop acute testicular pain. 244 parents (93.8%) had never discussed this matter with their sons, and 34 parents who were aware of the testicular torsion belonged in this group. Only nine parents with awareness of testicular torsion had discussed this matter with their sons.

Discussion

When you consider the international literature, there is some documented evidence regarding the awareness of testicular torsion in other countries. However, this is not

the case in Sri Lanka. We could not come across any similar studies related to this common surgical emergency in our country.

In our study, the majority of the parents with male children (217 parents; 83.5%) were unaware of this condition, and this group also included 50% of the parents who work in the health sector. So, our study identifies a gap of knowledge regarding testicular torsion in our community, and we believe that raising awareness of testicular torsion is a crucial aspect of preventing testicular loss due to torsion.

There was no statistically significant relationship between the parent's gender or age in relation to awareness. However, we noticed comparatively a higher number of parents were aware of testicular torsion when it comes to the higher education group.

Considering parents' response to a potential torsion, most of them were planning to take the child to the hospital or to contact a doctor, and this is a positive aspect we noticed during our analysis.

The other thing to highlight is that the majority of the parents (93.8%) had never discussed this matter with their sons, and surprisingly, 34 parents (nearly 80%) who were aware of the testicular torsion were in this group. We firmly believe that boys must also be educated regarding the importance of seeking early medical care in the case of acute testicular pain. This is another aspect that we should focus on when conducting awareness programs.

Conclusion

Testicular torsion is a common surgical emergency that we encounter during our casualty days, and it is usually seen in boys less than 25 years of age. Since parents are in charge of their children's health, they should be made aware of this potential condition. Other than that, boys themselves should be educated about testicular torsion once they get to a sensible age. We noticed that the awareness of testicular torsion is low in our study group. Although it might not represent the entire Sri Lankan population, the findings of this study can be used to guide awareness programs regarding testicular torsion and its implications so that in the future people will properly react to potential torsion.

Acknowledgment

We want to thank all the parents who participated in the study. Also, we extend our sincere thanks to the ethical committee of "Teaching Hospital Peradeniya".

Conflicts of interest

There are no conflicts of interest.

References

- [1] K. R. Drlik M, "Torsion of spermatic cord in children: a review," *J Pediatr Urol*, pp. 259-66, 2013.
- [2] Wang CL, Aryal B, Oto A, Allen BC, Akin O, Alexander LF, Bardo DME, Chong J, Froemming AT, Fulgham PF, Heller MT, Maranchie JK, Mody RN, Patel BN, Schieda N, Turkbey IB, Venkatesan AM, Yoo DC, Lockhart ME., "ACR Appropriateness Criteria® Acute Onset of Scrotal Pain-Without Trauma, Without Antecedent Mass," *Journal of the American College of Radiology*, pp. S38-S43, 2019 May.
- [3] K. K. A. A. Sharp VJ, "Testicular torsion: diagnosis, evaluation, and management," *American Family Physician*, 2013.
- [4] U. W. Donohue RE, "Torsion of spermatic cord," *Urology @ , the "Gold Journal"*, vol. Volume 11, no. January, pp. 33 - 36 . 1978.
- [5] Barada JH, Weingarten JL, Cromie WJ, "Testicular Salvage and Age-Related Delay in the Presentation of Testicular Torsion," *The Journal of Urology*, vol. 142, no. 3, pp. 746-748, 1989.
- [6] Lee C. Zhao, Timothy B. Lautz, Joshua J, and Max Maizels, "Pediatric Testicular Torsion Epidemiology Using a National Database: Incidence, Risk of Orchiectomy and Possible Measures Toward Improving the Quality of Care," *The journal of Urology*, vol. 186, no. 5, pp. 2009-2013, 2011.
- [7] Nicholas G. Cost, Nicol C. Bush, Theodore D. Barber, Rong Huang, Linda A. Baker, "Pediatric testicular torsion: Demographics of National orchiopexy versus orchiectomy rates," *Journal of Urology*, vol. 185, no. 6, pp. 2459-2463, 2011.
- [8] Yap LC, Keenan R, Khan J, Cozman C, Dowling C, Cullen I, Darcy F, "Parental awareness of testicular torsion amongst Irish parents," *World Journal of urology*, vol. 36, p. 1485-1488, 2018.
- [9] Congeni J, Miller SF, Bennett CL, "Awareness of genital health in young male athletes," *Clinical Journal of Sport Medicine*, pp. 22-26, 2005.
- [10] Friedman AA, Ahmed H, Gitlin JS, Palmer LS., "Journal of pediatric urology," *Standardized education and parental awareness are lacking for testicular torsion*, 2016.
- [11] Alyami FA, Modahi NH, Alharbi AM, Alkhelaif AA, Alhazmi H, Trbay MS, Neel KF., "Parents' awareness and knowledge of testicular torsion: A cross-sectional study," *Urology Annals*, pp. 58-61, 2019.
- [12] A. Taylor, "Testicular torsion education: Improving awareness among boys and their caregivers regarding the urgency of evaluating scrotal pain," University of Nebraska Medical Center, 2022.