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Testicular torsion: An assessment of knowledge and referral pattern among health care workers in primary health-care facilities in Auchi, Nigeria

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ABSTRACT

Objectives: Testicular torsion is the twisting of the spermatic cord with attendant loss of the blood supply to the affected testis. It is a common urological emergency and one of the frequent causes of acute scrotum in adolescents and young adults. Prompt diagnosis and immediate surgical intervention are necessary for testicular salvage. Testicular loss is directly linked to delay in presentation, surgery, and the referral patterns at the point of the first contact with health-care providers. The purpose of our study is to assess the knowledge, management methods, and referral pattern among health care workers in the primary health-care facilities in Auchi primary health-care zone, Nigeria.

Material and Methods: This was a cross-sectional carried out among primary health care workers in Auchi primary health-care zone between May and October 2020. A structured self-administered questionnaire was given to all the first contact health care workers in this zone. The knowledge, management, and referral pattern of testicular torsion were determined based on responses to the questionnaires. Data were analyzed using SPSS version 21. Results were displayed with frequency distribution tables and charts.

Results: Eighty-seven health care workers met the inclusion criteria and were given questionnaires to fill. The mean age of the respondents was 37.74 ± 7.53 years. The majority of the health workers (n = 66, 75.9%) have more than 5 years' experience with only 12 (13.8%) having a secondary level of education. Most respondents have heard of testicular torsion (n = 77, 88.5%) and know the symptoms (n = 68, 78.2%) but they have a poor knowledge of the age group predominantly affected (n = 36, 41.1%) and testicular survival time following torsion (n= 41, 47.7%). Only about a third (n = 28, 32.2%) had attended to patients with testicular torsion. Of the 28 health workers who had managed patients with testicular torsion, less than half (n = 11, 39.3%) referred almost immediately, while about half treated conservatively (n = 14, 49.9%) keeping the patients under their care for a period of 3–7 days.

Conclusion: This study showed that a comprehensive education of all categories of health workers in the primary health-care centers is needed. This is necessary for the early identification and appropriate surgical intervention or prompt referral of patients with testicular torsion to prevent avoidable testicular losses.

Keywords: Testicular torsion, Referral, Health workers, Primary health-care centers

INTRODUCTION

Testicular torsion remains a common surgical emergency of adolescent males and young adults.[1] With a reported incidence of one in 4000 males below the age of 25 years, it is responsible for about one-third of acute scrotum cases in the second and third decades of life.[1]

Patients with testicular torsion frequently present with testicular/abdominal pain of acute onset, accompanied by nausea, vomiting, and scrotal swelling.[1] Physical examination may reveal a high-riding testis in a transverse lie with thickened cord and an absent cremasteric reflex on the ipsilateral side.

The goal of the management of torsion is testicular salvage. As testicular torsion is a time-dependent uropathology, delays in presentation, referral, or surgical intervention result in higher rates of testicular loss.[2] The testicular salvage rate is about 90% if surgical intervention is done within 6 h of the onset of symptoms, 50% at 12 h, and about 10% at 24 h. Beyond 24 h, the salvage rate is almost a mirage.[2,3] Prompt referral to a urologist is recommended[4] to maximize the chances of testicular survival.[5,6]

Testicular loss in sub-Saharan Africa is directly related to late presentation, missed diagnosis, and delay in the referral at the point of the first contact with health workers.[7,8] In recent times, our health facility has experienced a high rate of testicular losses from misdiagnosis and delayed referral of patients with acute scrotum from referring health facilities. This paper, therefore, sets out to assess the knowledge and pattern of management and referral of testicular torsion among health care workers in primary health-care facilities in the Auchi zone, Nigeria.

MATERIAL AND METHODS

This was a cross-sectional study carried out between May and October 2020 in all the 20 primary health facilities in Auchi zone, in Edo North senatorial district of Edo state, Nigeria.

The study population comprised health care workers in all the primary health-care centers. Those who are not first contact health-care providers were excluded from the study.

All the respondents gave written informed consent before responding to the questions. The Ethics Committee of the Faculty of Clinical Sciences, Edo University, gave approval for the study.

Data were collected using a self-administered structured questionnaire that was pretested at the Edo University Health Center. The study protocols were in line with the Declaration of Helsinki of 1964 and its updated version in 2013. The questionnaire was divided into sociodemographic, knowledge of testicular torsion, management, and pattern of referral sections. The sociodemographic questions concentrated on the personal information of the respondents such as age, religion, educational level, marital status, and occupation. Respondents' knowledge was tested by asking questions relating to symptoms, the age group most commonly affected, and testicular survival time following testicular torsion. The participants were asked if they had managed patients with testicular torsion, the methods used in managing the patients, the duration of management, and the type of facility patients were referred to in the management and pattern of referral section.

Questionnaires were checked for mistakes at the end of the data collection. Data were analyzed with the Statistical Package for the Social Sciences (SPSS version 21, SPSS Inc., Chicago, IL, USA). Results were presented with frequency distribution tables and charts generated from variables.

RESULTS

The age range of the participating health workers was 20–52 years with a mean of 37.74 ± 7.53 years. The age group with the highest number of respondents was 36–40 years (n = 25, 28.7%). The mean years of practice was were.40 ± 4.67 years with the majority of the health workers (n = 66, 75.9%) having more than 5 years' experience. Table 1 displays the sociodemographic distribution of the first contact health care workers.

About 89% (n = 77) of the participants had heard of testicular torsion. Of these 77 respondents, the majority (n = 36, 46.8%) were taught about testicular torsion in school, while about a quarter (n = 19, 21.8%) heard about it in their workplace. The remaining respondents knew about it from medical textbook (n = 4, 5.2%), social media (n = 10, 13.0%), and seminars (n = 8, 10.4%). The majority of the health workers (n = 62, 80.5%) have heard about testicular torsion for at least 3 years before this study.

A little above a 10th of the respondents (n = 10, 11.5%) have not heard of testicular torsion. The CHEW and the health assistants had equal contributions to this group of respondents. The knowledge of testicular torsion among the health workers is as displayed in Table 2.

Of the 87 respondents, only about a third (n = 28, 32.2%) had managed patients with testicular torsion. The methods of management and pattern of referral of the patients managed are as shown in Table 3. The majority of the respondents who had seen testicular torsion referred almost immediately. A few gave antibiotics and analgesics before referral. The health workers who had managed testicular torsion patients with analgesics, antibiotics, or a combination of both kept the patients on admission for a duration of 3–7 days.

In all, the majority of the respondents (n = 77, 88.5%) are aware of a specialist to whom they can refer patients with testicular torsion. All respondents are willing to know or to know more about testicular torsion.

DISCUSSION

Testicular torsion is an acute vascular accident caused by the rotation of the spermatic cord, with attendant obstruction

Table 1: Sociodemographic information of the study participants.

Variable	Variable subcategory	Frequency (N)	Percent (%)
Age	20–25	4	4.6
	26–30	17	19.5
	31–35	13	14.9
	36–40	25	28.7
	41–45	14	16.1
	46–50	12	13.8
	>50	2	2.3
Sex	Male	29	33.3
	Female	58	66.7
Marital status	Single	21	24.1
	Married	60	69.0
	Widowed	4	4.6
	Separated	2	2.3
Highest education level	WASC	12	13.8
	Diploma	26	29.9
	HND	28	32.2
	BSc	18	20.7
	MBBS	3	3.4
Profession	Medical doctor	3	3.4
	Nurse	22	25.3
	CHEW	35	40.3
	Health assistant	25	28.7
	Others	2	2.3
Years of practice	0–5	21	24.2
	6–10	33	37.9
	>10	33	37.9

WASC: West African School Certificate, HND: Higher National Diploma, BSc: Bachelor of Science, MBBS: Bachelor of Medicine and Bachelor of Surgery, CHEW: Community Health Extension Worker

Table 2: Knowledge of testicular torsion among respondents.

	Frequency (N)	Percent (%)
Had heard of testicular torsion		
Yes	77	88.5
No	10	11.5
Knew the meaning of testicular torsion		
Yes	68	78.2
No	19	21.8
Knew the age group most affected		
Yes	36	41.4
No	51	58.6
Knew testicular torsion as an emergency		
Yes	57	65.5
No	30	34.5
Knew that testes may not survive after 24 h of torsion		
Yes	41	47.7
No	46	52.3
Knew the symptoms and signs of testicular torsion		
Yes	70	80.5
No	17	19.5

Table 3: Pattern of management and referral by respondents.

Variable	Variable subcategory	Frequency (N)	Percent (%)
Managed testicular torsion before?	Yes	28	32.2
	No	59	67.8
Testicular torsion management	Antibiotics	2	7.1
	Analgesics	6	21.4
	Analgesics/ antibiotics	6	21.4
	Surgery on affected side	1	3.6
	Surgery on both sides	2	7.1
	Referred immediately	11	39.3
Hospital referred to	Comprehensive health center	1	5.6
	General hospital	13	72.2
	Private hospital	1	5.6
	Teaching hospital	2	11.2

to the flow of blood to the testis. To this end, delays in presentation, surgical intervention, or referral may result in irreversible testicular damage.[9] The degree of testicular ischemia depends on the duration of torsion and the extent of rotation of the spermatic cord.[1,2]

Testicular torsion is a urological emergency that affects any age group but most common in the second and third decades of life. Pentyala *et al.*[6] reported a peak age range of 12–18 years while Magoha[10] in a study of 81 testicular torsion patients in Lagos reported a mean age of 21.3 years. Although the majority of the health care workers in this study have heard of and knew the meaning of testicular torsion [Table 2], about one-third does not know that testicular torsion is an emergency while only about 41% know the age group most affected. The awareness of the emergency nature and the age group most affected by testicular torsion is important in prompt diagnosis and urgent surgical intervention or referral of patients with suspected testicular torsion.

Testicular torsion is a time-sensitive uropathology. Any delay in presentation, intervention, or referral may lead to higher rates of testicular loss. In general, testicular torsion addressed within 6 h of the onset of symptoms results in about 90–100% testicular salvage, between 6 and 12 h gives about 50% testicular salvage, and if treated within 12–24 h only about 10% of testes can be salvaged.[2,3,11,12] It is necessary, therefore,

that the first health care worker to handle the case must have a very high index of suspicion of this condition and intervene immediately or refer promptly where necessary to avoid preventable testicular losses. In this study, less than half of the health care workers were aware that the testis may not survive beyond 24 h of the onset of testicular torsion. This may have contributed to health workers managing testicular torsion patients with analgesics, antibiotics, or a combination of both and keeping the patients on admission for a duration of 3–7 days.

Testicular torsion is conventionally diagnosed by history and physical examination. As commonly seen in any acute vascular accidents, the pain of testicular torsion is usually of sudden onset, accompanied by nausea, vomiting, and scrotal swelling.[13] However, the presentation of sudden-onset scrotal or abdominal pain may vary according to the extent and duration of torsion.[6] A high-riding testis in an abnormal horizontal orientation with thickened cord and an absent cremasteric reflex on the ipsilateral side are characteristic findings on physical examination.[1,2,13] One-fifth of our study participants could not demonstrate a good knowledge of the symptoms and signs of testicular torsion. This lack of awareness of the correct diagnostic knowledge of testicular torsion undoubtedly results in misdiagnosis, delay in referral, inappropriate management, and eventual high incidence of testicular death. Health education of the first contact health-care providers on the clinical features of testicular torsion will result in early referral and reduction in delayed diagnosis and mismanagement.

Testicular loss from torsion is a towering disaster for the patient. This miserable outcome is still commonly seen in our environment.[14] The overall salvage rate is very low in late presentation, delayed referral, and surgical intervention.[1,2] Peeraully *et al*.[15] in a single-center retrospective analysis of the source of referral to a tertiary hospital for emergency scrotal exploration found that the orchidectomy rate was higher with those referred either from primary care centers (43%) or transferred from other hospitals (50%) when compared to patients who presented directly to their emergency department (23%). This wide difference may be accounted for by delayed referral occasioned by misdiagnosis and employing inappropriate treatment modalities. Some of our study participants gave antibiotics, analgesics, or a combination of both even after an appropriate diagnosis of testicular torsion.

Furthermore, in this study, some respondents inappropriately referred patients to centers with no urologist or surgical expertise required to manage testicular torsion [Table 3]. The previous works have reported a relationship between the referral pattern of patients with testicular torsion and increased risk of testicular loss.[15,16] In addition, one of the three doctors who offered immediate surgical intervention operated only on the affected hemi-scrotum. Adequate enlightenment of the first contact health-care providers on the management of this condition will enable them to respond appropriately and decrease the high rate of orchidectomy associated with delays in diagnosis, misdiagnosis, and inappropriate treatment.

CONCLUSION

Testicular loss is directly linked to delayed presentation, delay in surgery, and the referral patterns at the point of the first contact with health-care providers. A comprehensive torsion education of all categories of first contact health workers is necessary for the early identification of patients with testicular torsion, appropriate referral, and prompt management.

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Declaration of patient consent

Institutional Review Board (IRB) permission obtained for the study.

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Conflicts of interest

There are no conflicts of interest.

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