Suspected testicular torsion: A survey of clinical practice among urology residents (trainees) and specialists (trainers) in Jordan

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Abstract

Objective: To assess the clinical practice for suspected testicular torsion among urology specialists (trainers) and residents (trainees) in Jordan.

Methods: Electronic questionnaire containing nine questions regarding diagnosis and management of suspected testicular torsion was sent by E-mail to 70 urologists (35 residents and 35 specialists) selected randomly by stratified random sampling from different clinical societies (university hospitals, military hospitals, ministry of health and private hospitals), 56 of them were returned complete (27 specialists and 29 residents) while 14 (8 specialists and 6 residents) did not respond.

Results: Although time is crucial in suspected testicular torsion emergency management, 74% (20) of specialists and 75.9% (22) of residents prefer to do a scrotal ultrasound (if available) rather than to explore immediately in suspected testicular torsion. Intra-operatively 55.6 % (15) of specialists and 44.8% (13) of residents choose midline scrotal incision to do scrotal exploration and, if testicular torsion is the case during exploration 77.8% (21) of specialists and 89.7% (26) of residents advise doing fixation of the other testes at the time of exploration. If there is no torsion at the time of exploration 48.1% (13) of specialists and 41.4% (12) of residents do orchidopexy anyway. Regarding sutures used for fixation, 77.8 % (21) of specialists and 69% (20) of residents use absorbable sutures.

Conclusion: This survey shows no significant difference in clinical practice for suspected testicular torsion between urology residents and specialists and raises the importance to formulate general guidelines for both diagnosis and management of this emergency situation.

Keywords: Testicular torsion, Scrotal ultrasound, orchidopexy.

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1. Introduction

Testicular torsion remains a urological emergency requiring prompt clinical assessment and surgical treatment [1]. Testicular torsion can occur at any age; however, its peak incidence is in newborn with another peak in adolescence, and rarely seen in men over the age of 40 years [2].

Patient with acute scrotum generally presents with pain and swelling (present in 44% of cases) [3]. Early scrotal exploration of suspected testicular torsion decreases the risk of testicular ischemia [4].

Intraoperative findings during scrotal exploration for acute scrotum are either true testicular torsion (25%), torsion of testicular appendages (62%), epididymitis (10%), testicular trauma (2%) or other conditions which represent only 1% [5]. However, the management of testicular torsion is controversial and there are variations in the policy of testicular torsion management [6], hence the importance of our study to assess the clinical practice for suspected testicular torsion among urology

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residents and specialists in Jordan and review published articles on this subject.

2. Materials and Methods

2.1. study design

The study was ethically approved from Jordan University of Science and Technology number 38/127/2019.

The study was a cross sectional study. Electronic questionnaire utilizing Google Forms consisting of nine questions to assess urologists' practice for the diagnosis and surgical treatment of suspected testicular torsion were sent by e-mail, from November 2019 to January 2020, to 70 urologists, 35 of them were residents (trainees) while the remaining 35 were specialists (trainers). Candidates were selected randomly (by stratified random sampling according to registration number in Jordan Medical Association) from different clinical settings including university hospitals, military hospitals, ministry of health and private hospitals distributed in different regions in Jordan. Fifty-six of the questionnaires were returned complete (27 specialists and 29 residents), while the remaining 14 (8 specialists and 6 residents) were incomplete and, hence were excluded from the study.

2.2. Questionnaire

Each questionnaire consisted of 9 questions selected after a thorough discussion with four senior urology consultants in Jordan, who believed that these questions covered the important points in testicular torsion management.

2.3. Statistics

Data entry and analysis were performed using the SPSS statistical package (version 20). Frequency and percentage tables were generated to present the descriptive statistics. Mean and standard deviation (SD) were used to express the age and year of experience for both the specialist and resident.

Categorical data were analysed using the chi-square test. A p value of <0.05 was considered statistically significant.

3. Results

56 out of 70 (80%) questionnaires were returned complete, 27 (48.2%) by specialists and 29 (51.8%) by residents. Mean age of specialists was 35.44 years, which is 5 years older than that of the residents (30.79 years). Table 1 and 2 show the demographic characteristics of the sample.

Although time is crucial in acute scrotum, 20 of the specialists (74.1%) and 22 of the residents (75.9%) routinely perform scrotal Doppler ultrasound (if available) rather than immediate scrotal exploration. Pre-operatively, 20 of the specialists (74.1%) and 20 of the residents (69%) consider scrotal exploration as clean-contaminated surgery, hence they advise giving intra-venous antibiotics just before the procedure. Similarly, on discharge, 17 of the specialists (63%) and 22 of the residents (75.9%) prefer to send patients home on oral antibiotic.

Regarding the type of surgical incision, 15 of the specialists (55.6%) and 13 of the residents (44.8%) prefer to perform midline scrotal incision, while 7 of the specialists (25.9 %) and 12 of the residents (41.4%) use transverse incision with the remaining performing paramedian incision.

If the intra-operative finding was torsion, the majority of urologists (21 (77.8%) of specialists and 26 (89.7%) of residents) perform fixation of the other testis in the same emergency exploration rather than elective orchidopexy to the other side later on. When participants were asked about orchidopexy itself, 21 (77.8%) of the specialists and 20 (69%) of the residents reported the use of absorbable suture.

On the other hand if no torsion is found during exploration, 13 (48.1%) of the specialists and 12 (41.4%) of the residents still perform ipsilateral orchidopexy. A greater percentage of urologists (92.6% of specialists and 86.2% of residents) would remove testicular appendages if found during exploration.

Although testicular torsion can recur after orchidopexy, only 9 (33.3%) of the specialists and 5 (17.2%) of the residents advise performing Jabouly procedure during surgery.

As seen in Table 3, no statistically significant difference in the clinical management of suspected testicular torsion was found between residents and specialists in any of the questions asked (Chi-Square, Fisher's Exact Test).

4. Discussion

Our survey shows variations in both diagnosis and management of suspected testicular torsion although no significant difference was found in the clinical practices between urology residents and specialists. Because acute scrotum is a urological emergency, it must be done by residents just as well as by specialists. We reviewed some of these variations in the management of acute scrotum from published articles.

As the viability of testes is significantly reduced after 6 hours of ischemia, time is important in the management of acute scrotum [7]. Performing scrotal Doppler ultrasound in suspected testicular torsion not only results in 48 to 128 minutes delay [8], which can prolong testicular ischemia, but it also has a specificity rate of 76.9% - 97% and a sensitivity rate of 78.6%-80% [9] meaning that there is a chance of false positive and false negative results. The radiological finding with the highest sensitivity for testicular torsion on color Doppler ultrasound is heterogeneous echogenic testes, while an enlarged epididymis indicates that testicular torsion is unlikely [10]. Thus, it is advisable to perform scrotal Doppler ultrasound if the clinical picture is unclear and omit it if history and clinical exam are suspicious for testicular torsion [11]. However, almost three quarters of the sample prefer to use ultrasound prior to surgery. Similar results were reported among Saudi urologists [12]. On the other hand, this differs from the findings of another study from North West England where most urologists will proceed with exploration rather than color Doppler ultrasound [6]. Based on history and clinical exam alone, negative scrotal exploration rate was 45.5%. However, when combined with color Doppler ultrasound, this rate was decreased by 10%,reducing morbidity from unnecessary exploration [13].

One scoring tool**,** **TWIST** (testicular workup for ischemia and suspected torsion), developed from a prospective study evaluating 338 children in a single institution, was created to aid in the initial diagnostic decision-making of testicular torsion. Criteria in this score include testicular swelling (two points), hard testes (two points), absent cremasteric reflex (one point), nausea or vomiting (one point) and high riding testicle (one point). A score of 5-7 has a positive predictive value of 100% (urgent exploration warranted with no need for an ultrasound), and a score of 0-2 has a negative predictive value of 100% (unlikely to be torsion with no need for an ultrasound). A score of 3-4, however, warrants an ultrasound [11].

Most urologists replying to this survey recommend giving an antibiotic preoperatively. This is in line with the findings of a retrospective study in which scrotal cases were considered as class 2 (clean-contaminated) surgery and, therefore, requiring a single dose of antibiotic preoperatively [14].

In the case of torsion in the present survey, the general view of the majority of urologists (specialists and residents) is to perform orchidopexy to the other side at the time of emergency exploration. This is in line with a previous study from Saudi Arabia where fixation of the contralateral testis during the same operation was performed by most consultants [12]. These findings are also supported by evidence from another study [15] reporting a 78% risk of complete bell clapper anomaly in acute testicular torsion, which increases the risk of contralateral torsion [15], hence the need for fixation of the other testis.

Because most urologists opt to perform contralateral orchidopexy at the time of exploration if torsion was found, the most commonly used incision for scrotal exploration in the present survey is the midline one, which provides a single incision, less disruption of tissues and less pain [16] [17]. Likewise, a study conducted by Pearce et al. (2002) showed that the favored incisions were median raphe and transverse [6].

Most published reports advise using non-

absorbable sutures [19], though some perform orchidopexy avoiding transparenchymal suturing as tunica albuginea suturing can affect spermatogenesis [20]. Although eversion orchidopexy (Jaboulay) technique can be used as an effective procedure to prevent recurrent testicular torsion compared to standard orchidopexy [21], using Jaboulay repair in addition to standard fixation is not routinely performed [6].

When the intra-operative finding is not torsion, there is no evidence supporting the practice of orchidopexy as it can cause trauma to testes [6]. As testicular appendage torsion is a more common finding compared with testicular torsion during acute scrotal exploration, and in view of the ease of its excision with almost no morbidity, testicular appendage excision at the time of exploration is justified [6], especially since its excision reduces post-operative pain [22].

Limitations of the study

There are some limitations in this study that could be addressed in future similar studies. First, the number of urologists included in this survey is relatively small (n=70), thus it will be better to have a larger sample size in future studies.

Second, the survey compared the answers between residents and specialists without considering the level of experience between urologists in each group (junior or senior urologists). Finally, as a survey, the data collected may not represent accurate candidate information.

5. Conclusion

Testicular torsion is one of the top urological emergencies and must be dealt with as quickly as possible by a urologist, be it a resident or specialist, whoever is present in the emergency department. In the present survey, we found no significant difference in the clinical management of suspected testicular torsion between urology specialists and residents. Furthermore, this study raises the importance to formulate general guidelines for prompt and correct management of this emergency case.

Table 1: - Number of urologists (specialists and residents) , their age groups and years of experience

	Count	Frequency
Clinical rank		
Specialist	27	48.2%
residents	29	51.8%
Age		
25-30	15	26.7%
31-35	26	46.5%
36-40	13	23.3%
41-45	2	3.5%
Year of experience		
0-5 years	43	76.7%
6-10 years	12	21.5%
11-15 years	1	1.8%

Table 2: Mean and standard deviation (SD) for the age and year of experience for the specialist and resident

Clinical rank	Age (years)		Year of experience	
	Mean	SD	Mean	SD
Specialist	35.44	3.65	4.41	3.09
Resident	30.79	2.97	3.93	1.85

SD - standard deviation

Table 3: - Answers for survey questions (for both specialists and residents) and P values

Question	Answer	Clinical rank				P value
		Specialist		Resident		
		Count	Frequency	Count	Frequency	
If you suspect testicular torsion, you prefer to do ultrasound (if available) to confirm your diagnosis?	Yes	20	74.1%	22	75.9%	0.560
	No	7	25.9%	7	24.1%	
You prefer to give the patient I.V antibiotic on anesthesia induction?	Yes	20	74.1%	20	69.0%	0.450
	No	7	25.9%	9	31.0%	
Your preferred incision in scrotal exploration would be?	Midline raphe	15	55.6%	13	44.8%	0.472
	Transverse	7	25.9%	12	41.4%	
	Paramedian	5	18.5%	4	13.8%	
If intra- operatively u find testicular torsion, and the testes is viable, you will do orchidopexy by?	Non-absorbable suture	6	22.2%	9	31.0%	0.330
	Absorbable suture	21	77.8%	20	69.0%	
If intra- operatively u find testicular torsion, you prefer to do bilateral orchidopexy or to do other side fixation later on?	Elective fixation of the other side later	6	22.2%	3	10.3%	0.199
	same time bilateral orchidopexy	21	77.8%	26	89.7%	
If intra-operative finding shows no torsion, you prefer to do orchidopexy anyway?	Yes	13	48.1%	12	41.4%	0.405
	No	14	51.9%	17	58.6%	
If you find testicular appendage intra-operative, you prefer to remove it routinely even if it is normal?	Yes	25	92.6%	25	86.2%	0.370
	No	2	7.4%	4	13.8%	
You prefer to do Jaboulay procedure (evert tunica vaginallis) always?	Yes	9	33.3%	5	17.2%	0.140
	No	18	66.7%	24	82.8%	
You prefer to give patient antibiotic on discharge?	Yes	17	63.0%	22	75.9%	0.224
	No	10	37.0%	7	24.1%	

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دراسة لبيان كيفية التعامل السريري مع التواء الخصية بين مقيمي واخصائي جراحة الكلى والمسالك البولية في الاردن

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الملخص

الهدف من الدراسة: يعتبر التواء الخصية من الحالات الطارئة التي يجب التعامل معها بشكل طارئ, وتهدف الدراسة الى بيان كيفية التعامل السريري سواء بالتشخيص او بالعلاج بين مقيمي واخصائي جراحة الكلى والمسالك البولية في الاردن.

منهجية البحث :قمنا باستخدام استبانة الكترونية تحتوي على تسعة اسئلة تتعلق بتشخيص و علاج التواء الخصية, حيث قمنا بارسالها عن طريق البريد الالكتروني الى 70 جراح كلى ومسالك بولية (35 مقيم و 35 اختصاصي) تم اختيارهم بشكل عشوائي من مؤسسات طبية مختلفة كالمستشفيات الجامعية, والمستشفيات العسكرية , ومستشفيات وزاره الصحة بالاضافة الى المستشفيات الخاصة. 56 من الاستبيانات تم تعبئتها بشكل كامل (من قبل 27 اختصاصي و29 مقيم).

النتائج: على الرغم من ان عامل الوقت ضروري عند التعامل مع التواء الخصية, فان 20 اختصاصي (74%) و22 مقيم (9.75%) فضلوا طلب صوره تلفزيونية للخصيتين للمريض في حال توافرها عند الاشتباه بالتواء الخصية بدلا من اجراء استكشاف جراحي مباشر للخصيتين .اثناء العملية 15 اخصائي (6.55%) و13 مقيم (8.44%) فضلوا اجراء الجرح في منتصف كيس الصفن اثناء اجراء عملية استكشافية للخصية, واذا كانت النتيجة التواء خصية فان 21 من الاختصاصيين (8.77%) و 26 من المقيمين (7.89%) فضلوا تثبيت الخصية الاخرى في نفس العملية. بالنسبة للخيوط الجراحية التي يتم استخدامها فان 21 من الاختصاصيين (8.77%) و20 من المقيمين (69%) يفضلوا استخدام الخيوط التي يتم امتصاصها لاحقا.

الاستنتاج :بينت الدراسة ان لا فرق في التعامل السريري سواء في تشخيص او علاج التواء الخصية بين مقيمي واختصاصي جراحة الكلى والمسالك البولية في الاردن, بالاضافة الى ضروره وضع قواعد عامة لاتباعها سواء في تشخيص او علاج التواء الخصية.

الكلمات الدالة: التواء الخصية، صوره تلفزيونية للخصيتين، تثبيت الخصية.