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Ultrasonography Diagnosis of Scrotal Pathologies

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ABSTRACT:
Background and Objective: *Ii is often difficult to diagnose the pathologies of testicle itself or adjacent parts in scrotum clinically. The aims of this study were to detect the abnormalities findings by use of ultrasound (u/s).*

Methods: *Seventy five patients, with age ranging from 0 to >60 years(mean age of 35 +/- 5years), symptomatic with different scrotal clinical indications or infertility were examined by real-time ultrasound during the period fromOctober 2010 to February 2011 in King Abdulaziz University Hospital (KAUH)-Saudi Arabia, Jeddah.*
Results: *Study showed that the commonest sonographic findings of scrotal were the varicocele was noted in 37.33% .*
Conclusion: *Ultrasonography was the best imaging modality to diagnose many diseases of the scrotum.*

KEYWORDS: *ultrasound, scrotal, testicle, scrotum, varicocele.*

I. INTRODUCTION

The most safety imaging modality for diagnoses scrotal abnormalities is ultrasound (u/s). The normal testes in adults are paired organs with a symmetrical fine echotexture; each testis has a volume of 12–20 cm^3.

The testes are symmetric ovoid structures and measure approximately 5 × 3 × 2 cm in the postpuberal male [1].The fibrous tunica albuginea covers the testis and contains some nonstriated smooth muscle cells concentrated mostly on the posterior aspect of the testis; its function is to transport spermatozoa toward the rete testis and into the epididymis[2].

Testicular u/s is a useful noninvasive tool in both adult and pediatric patient. It avail as a good screening and diagnostic method and helps transcribe further confirmation or excludethe clinical diagnoses.Scrotal ultrasonography has a different applications, varying from acute testicle pain to more chronic and a symptomatic diseases.Doppler u/s is a noninvasive medical imaging with highly sensitive in the detection of intrascrotal abnormalities[3].

B–mode static scanner with 2.5MHz probe, first performed ultrasonography testes using by Miskin and Bain (1974) [4]. Sonograms with more details of B-mode as well as grey scale with a high frequency 5 MHz presented by Murray Miskin(1976), Martin Buckspan and Jerald Bain[5].

U/S ,deservedly became the first choice to detect scrotal abnormalities especially emergency cases because it is easy ,simple, rapid, relatively inexpensive and widely available[6,7] .The objective of this study to assess the usefulness of u/s in diagnosis of several scrotal pathologies and monitoring the sonographic findings through the frequency patients in KAUH.

II. SUBJECTS AND METHODS

A cross-sectional, descriptive study done between October 2010 to February 2011 in KAUH ,on 75 patients who were presented with scrotal problems and referred to u/sdepartment, for scrotal assessment by u/s with real time linear array transducer of 7.5-10 MHz . Married and single patients were came complaining of scrotal pain, swelling , infertility among married patients and some others symptoms.

III. RESULTS

A total of 75 patients with scrotal diseases were examined, with age range of 0 to more than 60 years. The secondto fourth decades constituted 43% of all cases (table-1).68 % of them was married(table-2).Of 75 patients, the most common indications of u/s scan was the scrotal pain 32 (43%),20 (27%) had infertility and 16 (21%) had scrotal swelling(table-3).The commonest sonographic findings were the varicocele was noted in 37.33%, hydrocele 16.00% while 10.67 % normal,epididymal cyst 8.00 %, epididymo-orchitis 6.67 %,tumor 2.67 %,testicular torsion 2.67 %, testicular microlithiasis 2.67 %, epididymitis 2.67 % and testicular cyst 2.67 % .Also 1.33 % equally for each of the following: scrotal edema, atrophied testicle, spermatocele, testicular abscess, orchitis and undescended testis (table-4).Results showed the most common age group were smitten by testicular varicose were 21-30 years in 10 patients 35.71 %, (31-40) in 9 cases 32.14 %, 41-50 in 3 patients 10.71 %,(11-20) 10.71 %,(51-60) 7.14 %,> 60 years 3.57 % and there was not percentage with 0-10 years. Out of 28 cases of varicocele, the affected left testis in 22 patients 78.57 %,bilateral in 5 cases 17.86 % and in right testis 3.57 %.Mass include (cyst,microlithasis ,calcification and tumor) which is the second common abnormalities in this study ,the commonest age group affected with this disease was 51-60 years in 5 patients 31.25 % followed by (31-40)25 %, (21-30)18.75 %,(11-20)12.5 %, (41-50)6.25 %,> 60 years 6.25 % and there was not percentage with 0-10 years.Out of 16 cases of masses,9 cases 56.25 % affected the right testis, bilateral 31.25 % and left testis 12.5 % .Hydrocele is the third common disease ,noted the commonest age group affected with it was (51-60) years 50 %,(21-30) 16.67 %,(31-40) 8.33%, (0-10) 8.33%,(41-50) 8.33%,> 60 years 8.33% and there was not percentage with 11-20 years. Out of 12 cases of hydrocele,5 cases 41.67% detected in the right testis, left testis found 33.33% andbilateral 25%.While the epididymitis and epididymo-orchitis which is the fourth common pathology,the commonest age group affected with this disease was 11-20 years in 3 patients 37.5 % followed by (51-60)25 %, (41-50) 12.5 %,> 60 years 25 % and there was not percentage with (0-10),(21-30) and (31-40) years. Out of 8 cases of epididymitis and epididymo-orchitis,4 cases 50 % affected the left testis, bilateral 25% and right testis 25% (table-5).

Table(1):Distribution of age groups among 75 patients.

Age groups	Number of patients	Percentage
[0-10]years	2	3%
[11-20]years	12	16%
[21-30]years	16	20%
[31-40]years	17	23%
[41-50]years	9	14%
[51-60]years	15	19%
>60years	4	5%
Total	75	100%

Table(2):Marital status in 75 patients.

Marital status	Number of patients	Percentage
Married	51	68%
Single	24	32%
Total	75	100%

Table(3):Clinical indications among 75 patients.

Clinical indications	Number of patients	Percentage
Scrotal pain	32	43%
Scrotal swelling	16	21%
Infertility	20	27%
Mass	4	5%
Other	3	4%
Total	75	100%

Table(4):Sonographic findings among 75 patients.

Sonographic findings	Number of patients	Percentage
Mass(tumor)	2	02.67 %
Hydrocele	12	16.00 %
Varicocele	28	37.33 %
Testicular torsion	2	02.67 %
Testicular microlithiasis	2	02.67 %
Epididymitis	2	02.67 %
Epididymal cyst	6	08.00 %
Epididymo-orchitis	5	06.67 %
Normal	8	10.67 %
Testicular cyst	2	02.67 %
Scrotal edema	1	01.33 %
Atrophied testicle	1	01.33 %
Spermatocele	1	01.33 %
Testicular abscess	1	01.33 %
Orchitis	1	01.33 %
Undescended testis	1	01.33 %
Total	75	100%

Table(5):Most common scrotal pathologies related with age groupsand the affected side.

Age groups/ years		Frequency				%			
		I	II	III	IV	I	II	III	IV
0-10		0	0	1	0	0.00 %	0.00 %	8.33 %	0.00 %
11-20		3	2	0	3	10.71 %	12.5 %	0.00 %	37.5 %
21-30		10	3	2	0	35.71 %	18.75 %	16.67 %	0.00 %
31-40		9	4	1	0	32.14 %	25.00 %	8.33 %	0.00 %
41-50		3	1	1	1	10.71 %	6.25 %	8.33 %	12.5 %
51-60		2	5	6	2	7.14 %	31.25 %	50.00 %	25.00 %
>60		1	1	1	2	3.57 %	6.25 %	8.33 %	25.00 %
Total		28	16	12	8	100%			
Affected Side	Right	1	9	5	2	3.57 %	56.25 %	41.67 %	25.00 %
	Left	22	2	4	4	78.57 %	12.5 %	33.33 %	50.00 %
	Bilaterally	5	5	3	2	17.86 %	31.25 %	25 %	25.00 %
	Total	28	16	12	8	100%			

I = Varicocele. II = Mass .III=Hydrocele. IV =Epididymitis and epididymo-orchitis

IV. DISCUSSION

Regarding to scrotal pathologies in this study**,** second to fourth decades constituted 43% of all cases which was noted themost affected age group. Aubaid et al[8] , showed that third and fourth decades constituted 44% of all cases.

In this present study, the majority of the sonographic findings was the varicocele , noted in 37.33% , hydrocele 16.00% while Aubaid et al[8] ,showed that hydrocele was the commonest ultrasound finding (33.1%), followed by varicocele as the 2nd common finding (20.3%). Regarding the relation of findings to age of patients 21-30 years were the most common age group were affected by testicular varicose and this confirmed with study of Aubaid et al[8]. Minayoshi et al[9], showed that the left side was affected in 78-93% of cases of varicocele, while bilateral varicoceles occurred in 7-22% and this was consistent with this study where left sided varicocele constituted 78.57 % and bilateral varicocele constituted 17.86 % of patients and also this results confirmed by two previous studies the first of Aubaid et al[8],83.33% and 16.67% respectively and the second of P.K Chhetriet al[10],which showed all the varicoceles were seen on the left. Varicoceles most occur on the left side due to the different route the left veins take out of the scrotum compared to the right[11].

The present study also found the commonest age group affected with scrotal masses diseases was 51-60 years 31.25 % followed by (31-40) 25 % . Cystic mass they are most commonly found in very young children and middle-aged adults. Benignity is more common in children, whereas malignancy is more common in adults[12,13]. In contrary, this study showed a right sided predilection for testicular masses (56.25 %), bilateral 31.25 %.A significantly increased incidence of testicular cancer is found in patients with cryptorchidism, developing in both the descended and the contralateral descended testes[14].

The commonest age group affected with hydrocele was (51-60) years 50 % in this study and this agree with the most previous studies documented hydroceles occur in adults , are most common in men aged over 40 years[15] and finding in all age groups usually over 40 years[16]. Regarding to the scrotum affected side a hydrocele agree with previous study showed may involve unilateral or bilateral[17].

Regarding to the affected side, the present study confirmed the previous study which showed epididymitis and epididymo-orchitis also may be unilateral or bilateral[18].

V. CONCLUSION

Ultrasonography worthily to be effective and fast modality for diagnosis of the scrotal pathologies. Advances in Doppler u/s have improved ability to make accurate diagnoses so use of ultrasonography in the evaluation of the scrotum is very important and more helpful. This study, documented the most common pathologic of scrotum, in addition to variety cases, which explain the utility of ultrasonography in the diagnosis of scrotal pathologies.

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