

Scrotal Swelling: Its Evaluation by Doppler Ultrasonography

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ABSTRACT

Objective: To determine the role of Doppler Ultrasound in the evaluation of scrotal swelling.

Study Design: Descriptive study.

Place and Duration of Study: This study was conducted at the Department of Radiology, Bolan Medical Complex Hospital Quetta from Jan 2016 to Dec 2016.

Materials and Methods: The 102 patients were selected from the outdoor, indoor and emergency departments of Bolan medical complex hospital Quetta. Patients presented with clinical signs and symptoms and Doppler ultrasound findings suggestive of scrotal pathologies. Colour doppler ultrasonography was used in the evaluation of scrotal pathologies. The patients were examined in various positions and with valsalva maneuver.

Results: The 102 patients of all ages were included in this study which comprises hydrocele 28 (27.4%), epididymo-orchitis 19 (18.6%), varicocele 18 (17.6%), Spermatocele/epididymal cysts 22(21.5%), testicular growth 3 (2.9%), inguinal hernia 6 (5.8%), testicular torsion 2 (1.9%), scrotal trauma 2 (1.9%) and pyocele 2 (1.9%). Intratesticular lesions were 32(31.3%) and extratesticular lesions were 70(68.6%).

Conclusion: Doppler ultrasound was used as an effective tool in the diagnosis of scrotal pathologies. Ultrasound is a non invasive imaging tool, cost effective and easily available.

Key Words: Scrotal Swelling, Evaluation, Doppler Ultrasonography

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INTRODUCTION

Normal adult testes are ovoid and measure approximately 3cm (AP) X 2-4cm (TR) X 3-5 (length) with volume of 12.5-19cc². However, the size of the testes decreases with age¹.

A high frequency linear transducer (7.5 – 10 MHZ) is used. The scrotum and its contents are scanned in at least two planes. The testicle and epididymis are scanned from one extreme to another noting echotexture and abnormalities. Doppler parameters are set to their most sensitive setting without introducing significant artifacts. Power and pulsed doppler should be optimized to display low flow velocities to demonstrate blood flow in the testes and adjacent structures.

Scrotal masses are caused by variety of disorders ranging from benign conditions to those requiring emergent surgical intervention. Painful scrotal masses require urgent evaluation²

Torsion of testis and strangulated hernia are surgical emergency, whereas epididymorchitis is treated by medicines.

Testicular trauma and obstructed hernia can be differentiated by taking history from the patient. Physical examination adds only a little information. Color doppler ultrasound is the modality of choice to differentiate testicular torsion from inflammatory conditions and thus help avoiding unnecessary surgical explorations.³

The history and physical examination findings of various etiologies of acute scrotal pain have a significant overlap, therefore making it difficult to differentiate these entities clinically.⁴

MATERIALS AND METHODS

This study was conducted in the department of radiology Bolan medical complex hospital Quetta during the year January 2016 to December 2016. This is a descriptive study comprises of 102 patients.

The patients were selected from the emergency, outdoor and indoor departments with the clinical signs and symptoms suggestive of scrotal pathologies.

The patients usually presents with pain and scrotal swelling.

The study was conducted by color doppler ultrasonography with high frequency 7 -10 MHZ linear transducer. The scrotum and its contents are scanned in at least two planes, in the transverse and longitudinal axis.

The scrotal pathologies especially the acute conditions are difficult to diagnose by clinical examination alone. Doppler ultrasound is the imaging modality of choice

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in the diagnosis of scrotal pathologies. Acute scrotal pain is commonly caused by testicular torsion. Any patient presenting with acute scrotal pain and or swelling should be urgently evaluated for testicular torsion because timely diagnosis is key to preserving testicular function.

RESULTS

A total of 102 patients were included in the study. 21 - 30 age group was the most common with 34(33.3%) followed by 31-40 years with 24(23.5%). Hydrocele was the most common disease with 28(27.4%) and the least common diseases were testicular torsion, pyocele and scrotal trauma having 2(1.9%) each. Out of 102 patients 32(31.3%) were having intratesticular lesions and 70(68.6%) were extratesticular.

Table No.1: Age Presentation of Different Diseases

Years	No.Patient	percentages
1-10	07	6.8%
11-20	11	10.7%
21-30	34	33.3%
31-40	24	23.5%
41-50	06	5.8%
51-60	02	1.9%
61-70	00	00%
71-80	00	00%
81-90	01	0.9%

Table No.2: Diseases with Percentages

S. No	Diagnosis	No of patients	percentages
1.	Hydrocele	28	27.4 %
3.	Epididymo-orchitis	19	18.6%
4.	Varicocele	18	17.6%
5.	Epididymal Cyst/spermatocele	22	21.5%
6.	Testicular growth	3	2.9%
7.	Inguinal Hernia	6	5.8%
8.	Testicular torsion	2	1.9%
9.	Scrotal trauma	2	1.9%
10.	pyocele	2	1.9%
	Total number of patients	102	

DISCUSSION

Doppler Ultrasonography is excellent, easily available, cost-effective and non invasive imaging tool for the diagnosis of scrotal swelling.

The patient is placed in a supine position with legs slightly apart. High frequency linear probes of 7 -10 MHZ are used⁵.

Hydrocele is the most common cause of scrotal swelling. The abnormal collection of fluid in the space

between the visceral and parietal layers of the tunica vaginalis results in a hydrocele⁶

The hydrocele can be easily diagnosed by ultrasound by having anechoic fluid.

In a young patient with acute scrotal pain and swelling may be due to testicular torsion. Early diagnosis within six hours by doppler ultrasound is mandatory to preserve the testis.

The ultrasound findings are usually hypoechoic, swollen testis without any doppler flow⁷

The pyocele is having fluid in the scrotal sac with internal debris, swelling and inflammatory changes within the scrotal contents.

Acute epididymorchitis consist of pain, swelling and inflammation of epididymis with or without inflammation of the testes. The most common route of infection is local extension and is mainly due to infection spread from the urethra sexually transmitted disease or from the bladder. Mumps should also be considered as an etiology. Testicular torsion is the main differential diagnosis.

The ultrasound findings are swollen/edematous testicles/epididymis with increased doppler flow noted. Scrotal wall thickening and inflammatory hydrocele are noted⁸.

Inguinal hernias account for 75% of abdominal wall hernias, with life time risk of 27% in men and 3% in women⁹.

A spermatocele is a cystic accumulation of sperm that contains fluid typically arising from the head of the epididymis. It is a common benign finding and usually smaller than 1 cm. less commonly, they may enlarge to several centimeters. Pain and discomfort may need surgical exploration. Ultrasound shows cystic mass lesion with internal debris. Spermatocele have been incidentally identified in 30% of patients undergoing scrotal ultrasonography for other reasons.

Primary testicular tumors are the most common solid tumor in men between the ages of 20 and 35 years. The cause of testicular cancer is not known. The genetic factors have a role in the development of testicular cancer¹⁰.

A varicocele is a dilatation of the pampiniform venous plexus. Varicocele is the recognized cause of decreased testicular function and can lead to infertility. Approximately 15-20% of the healthy fertile male population is estimated to have varicocele. Varicocele are much more common approximately 80-90% in the left testicle than in the right due to various factors. A patient with varicocele is usually asymptomatic. He may report scrotal pain and or heaviness¹¹. Ultrasonography of the varicocele shows dilated tortuous venous structures within the scrotum which increases in size with valsalva maneuvers.

A wide variety of traumatic mechanisms have been reported in scrotal trauma with blunt and or penetrating trauma to the scrotal area. The trauma manifests as

scrotal swelling with intratesticular and or scrotal hematoma in ultrasound¹².

CONCLUSION

Doppler ultrasonography is the modality of choice in the diagnosis of scrotal swelling. Ultrasonography is safe and non invasive imaging tool to differentiate the various scrotal pathologies and to avoid unnecessary surgical explorations.

Author's Contribution:

Concept & Design of Study: Muhammad Ashraf Kasi

Drafting: Muhammad Ashraf Kasi

Data Analysis: Muhammad Ashraf Kasi

Revisiting Critically: Muhammad Ashraf Kasi

Final Approval of version: Muhammad Ashraf Kasi

Conflict of Interest: The study has no conflict of interest to declare by any author.

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