Ultrasonographic Evaluation of Scrotal Swelling

O Rashid[1], T Talukdar[2], MJK Bhuiyan[3], MS Hossain[4], SM Sarwar[5], MA Hossain[6]

Abstract

Background*:** Scrotal swelling can occur in males at any age. A wide variety of disease process of scrotum manifest with pain or swelling or both and sometimes with mass. Prompt diagnosis is required to di?erentiate surgically manageable lesions from the lesions which can be managed conservatively. Clinical examination of the testis is especially difficult due to pain, tenderness or when obscured by a large hydrocele. To evaluate scrotal swelling with high resolution Ultrasonography and Color Doppler Ultrasonography may help a lot. The main aim of our study was to determine various etiological aspects of different swellings of scrotum, along with their various modes of presentations and utility of Ultrasonography to diagnose scrotal pathology. ***Methods: This prospective type cross-sectional study was undertaken from January 2017 to June 2017 at the department of Radiology & Imaging, Cox's Bazar Medical College Hospital (CoxMCH). A total 71 patients presented with scrotal swelling with or without pain referred by surgeon after clinical examination were evaluated with Ultrasonography during this period. ***Results:*** Out of the total 71 patients included in this study the maximum incidence of patients were in the 15-30 years of age group. Most common presentation was painful scrotal swelling with (87.32%). Left side was more common which was seen in 56.34% cases. Most common diagnosis on the basis of Ultrasonography was Acute epididymo-orchitis(36.62%). 2.82% of patients were with neoplasm (seminoma). ***Conclusion:*** Ultrasonography remains the first-line imaging modality for evaluation of acute or chronic scrotal diseases. It is a safe and reliable tool for demonstration of scrotal anatomy, localization of testicular lesions and assessment of vascularity.

Key words: Scrotal swelling, Ultrasonography etc. ***J Cox Med coll 2019;5(1): 22-25***

Introduction

Scrotal masses are a common presentation in primary care, and a painful scrotum accounts for 1% of emergency department visits[1].1 Some causes of scrotal masses require rapid diagnosis and treatment to avoid loss of fertility or other complications[2,3].

Ultrasonography (USG) is an essential imaging modality in diagnosing testicular and scrotal pathology, as it provides fine anatomical details of the testicle and surrounding structures and evaluates vascular perfusion in real time. Clinical examination often yields nonspecific signs and symptoms such as scrotal pain, swelling or a palpable scrotal mass. Ultrasonography is able to identify and characterize intratesticular or extratesticular lesions and is often able to distinguish between benign or malignant lesions as well as identify conditions that require emergency surgical intervention[4].

With USG examination, intrascrotal masses can be detected with a sensitivity of almost 100%[5]. USG is important in the evaluation of scrotal masses because its accuracy is 98% to 100% in distinguishing intratesticular from extratesticular pathology[6]. This distinction is important in disease management because most extratesticular masses are benign, but the majority of intratesticular lesions are malignant[7].

Portability, safety, low cost and efficiency, together with the ability to accurately define pathology rapidly, have made ultrasound the primary imaging modality for evaluation of the scrotum, testis and paratesticular structures. These factors provide for timely diagnosis and treatment[8].

While CT and MRI have dominated imaging of many regions of the body but they both have limitation in scrotal pathology. CT has the major drawback of radiation and MRI its cost. USG is exceptionally well suited to the study of the scrotum. It is simple to perform, rapid, non-

1. Dr. Osmanur Rashid
Assistant Professor (Radiology & Imaging)
Cox's Bazar Medical College.
2. Dr. Tutul Talukdar
Junior Consultant (Surgery)
250 Bed District Sadar Hospital, Cox's Bazar.
3. Dr. Mohammed Jahangir Kabir Bhuiyan
Associate Professor (Surgery)
Cox's Bazar Medical College.
4. Dr. Md. Shakaoath Hossain
Assistant Professor (Surgery)
Cox's Bazar Medical College.
5. Dr. Syed Mohammad Sarwar
Assistant Professor (Surgery)
Cox's Bazar Medical College.
6. Dr. Md. Anisul Hossain
Assistant Professor (Surgery)
Cox's Bazar Medical College.
Correspondence:
Dr. Osmanur Rashid
Email-osmanrashid76@gmail.com

invasive, inexpensive, safe and reproducible. Miskin M and Bain J[9] in 1974 were the first to perform USG examination of the scrotum using B mode static scanner with a 2.5 MHz transducer. In 1976, Miskin M, Buckspan M[10] and Bain J presented details of B mode as well as grey scale images with a high frequency 5 MHz transducer. Technical advancements in high resolution real-time and color flow Doppler USG have led to an increase in the clinical applications of scrotal USG.

Objective

The main aim of our study was to determine various etiological aspects of different swellings of scrotum, along with various modes of presentations and utility of Ultrasonography to diagnose scrotal pathology.

Methods

This prospective type cross-sectional study was undertaken from January 2017 to June 2017 at the department of Radiology & Imaging, Cox's Bazar Medical College Hospital (CoxMCH). A total 71 patients presented with scrotal swelling with or without pain referred by surgeon after clinical examination were evaluated with Ultrasonography during this period. Inguino-scrotal swelling, recurrent scrotal swelling and inguinal swelling were excluded from study.

The patient was examined in the supine position. The scrotum was elevated with a towel draped over the thighs. A high-frequency (7.5 MHz) linear array transducer of Toshiba Nemio Mx USG machine was used in this study. Images of both testes were obtained in transverse and sagittal planes. Additional views were obtained in the coronal or oblique planes, with the patient upright or performing the Valsalva maneuver when necessary. Color Doppler USG was also performed to evaluate testicular blood flow in normal and pathologic states. Subsequently these cases were followed and correlated with fine needle aspiration cytology or histopathology reports, surgical findings and response to treatment.

Follow up scan were done when indicated. The patients who were needed for follow-up USG but lost from follow up after initial USG were excluded from the study.

All demographic characteristics were recorded. Data were collected by using a standardized data sheet which included demographic variables, age, personal history, family history, history of contact with tuberculosis patients, history of exposure, any co-morbid disease, presenting symptoms and signs. All collected data were compiled, analyzed, calculated and presented in different tables and figures.

Results

Total 71 patients presented with scrotal swelling with or without pain were subjected for USG examination from the surgery department and followed up thereafter with either medical or surgical treatment as advised by the attending surgeon.

Age:

Among the 71 sufferers age was ranging from 11 to 70 years. Mean age was 32.21 years.

Table-l : Distribution according to age (N=71)

Age range (years)	No of patients	Percentage (%)
<15	03	04.22
15-30	35	49.29
30-45	20	28.18
>45	13	18.31

Most of the patients were 15-45 years of age accounting for 55 (77.47 %) of the 71 patients. The highest number (35) of cases was in the 15-30 years (49.29%).

Presentation:

Table-II : Distribution according to presenting symptoms (N=71)

Symptoms		No of patients	Percentage (%)	
Painless scrotal swelling		09	12.68	
Painful scrotal swelling	Acute pain	36	50.70	87.32
	Chronic pain	26	36.62	

62 (87.32%) patients were presented with painful scrotal swelling. Among them 36 (50.7%) patients were presented with acute scrotal pain with or without systemic symptoms and 26 (36.62%) patients were presented with chronic scrotal pain over a period of more than 6 weeks.

Laterality of Scrotal Swelling:

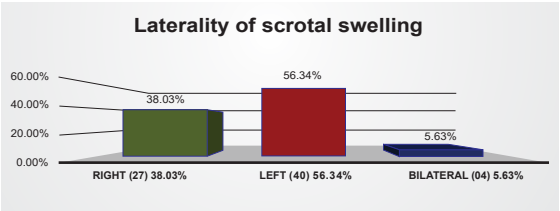

Figure 1: Distribution of Cases According To Laterality of Scrotal Swelling (N=71)

Regarding laterality of scrotal swelling, most patients (56.34%) out of 71 were presented with left sided scrotal problem but only 04 (5.63%) patients were suffering from bilateral disease.

Diagnosis

Table-III: Distribution according to Diagnosis on the basis of Ultrasonography (N=71)

Radiological Diagnosis	No of Cases	Percentage
Acute epididymo-orchitis	26	36.62%
Chronic epididymo-orchitis / chronic epididymitis	06	8.45%
Scrotal abscess	05	7.04%
Haematocele	03	4.23%
Hydrocele	11	15.49%
Epididymal Cyst	04	5.63%
Spermatocele	01	1.41%
Varicocele	10	14.08%
Testicular torsion	02	2.82%
Testicular neoplasm	02	2.82%
Scrotal wall neoplasm	01	1.41%

Regarding USG findings Acute epididymo-orchitis was the most prominent cause of scrotal swellings (36.62%) followed by Hydrocele (15.49%) and Varicocele (14.08%). Testicular neoplasm was diagnosed in 2.82% of the studied cases.

Treatment Modalities:

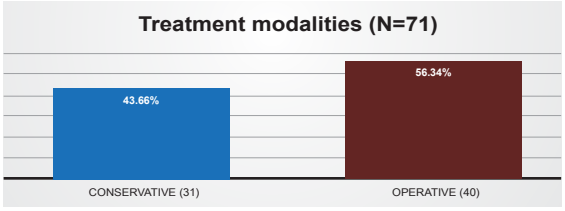

Figure 2: Distribution of cases according to Treatment Modalities (N=71)

In the management of these 71 cases of scrotal swellings in the present series 43.66 % cases were treated conservatively (antibiotics, scrotal support, analgesics, etc), 56.34 % patients underwent surgical treatment.

Discussion

The present study was done from January 2017 to June 2017 with a view to evaluate scrotal swellings in terms of their types, presentation and management modalities in 71 consecutive cases of scrotal swellings clinico-pathologically & radiologically.

Out of the total 71 patients included in this study the maximum incidence of patients were in the 15-30 years of age group (Table-I). Most common presentation was painful scrotal swelling with 87.32% patient having the problem (Table-II). Left side was more common which was seen in 56.34% cases (Figure-1). Most common diagnosed on the basis of USG was Acute epididmo-orchits (Table-III). 2.82% of patients were with neoplasm (seminoma) (Table-III) who underwent high inguinal orchidectomy.

Regarding Age incidence of scrotal swelling, the most sufferers were in younger age group that was 49.29% within 30 years.similarity was seen in the study of Chhetri PK[11] et al, which was 50% sufferer were within 30 years and 90% sufferers within 40 years.

Painful scrotal swelling was the commonest presentation in our series which was 87.32%. This percentage is little bit higher than the study of Tan GH et al[12] and Mukherjee S et al[13]. Because most patients in our series were in acute condition and patients with painless scrotal swelling were reluctant to seek treatment in our country.

Regarding laterality of scrotal swelling revealed that left side was more common which was seen in 56.34% cases followed by right side (38.03%) in our study. These findings were closely similar with the study of Patel et al[14] and Chauhan A et al[15] .

Ultrasonography is the most common and easily available modality for diagnosing scrotal swellings along with prompt clinical examination followed by appropriate surgical/medical management.

USG findings in our setting revealed Acute epididymo-orchitis as most prominent cause of scrotal swellings (36.62%) followed by Hydrocele (15.49%) and Varicocele (14.08%). Testicular neoplasm was diagnosed as 2.82% of the studied cases. This findings are little bit dissimilar with study of Chauhan A et al[15]. They found Hydrocele as most prominent cause of scrotal swellings i.e. 41%, followed by Varicocele (19%), acute epididymitis (13%), Acute epididymo-orchitis (7%). This difference probably due to unwillingness or hesitancy of people with scrotal swelling of our country for seeking treatment. They doesn't come to physicians or surgeons until the swellings become painful.

In the management of these 71 cases of scrotal swellings in the present series 43.66 % cases were treated conservatively (antibiotics, scrotal support, analgesics, etc), 56.34 % patients underwent surgical treatment. But in the study of Chauhan A et al[15], 28% patients were treated conservatively and reminders were managed surgically.

Conclusion

Ultrasonography remains the first-line imaging modality for evaluation of acute or chronic scrotal diseases. It is a safe and reliable tool for demonstration of scrotal anatomy, localization of testicular lesions and assessment of vascularity. As several testicular pathologies have characteristic ultrasonographic appearances, so USG is able to appropriately guide patient management and potentially prevent unnecessary surgical intervention.

References

1. Davis JE, Silverman M. Scrotal emergencies. Emerg Med Clin North Am. 2011; 29(3): 469-484.

2. Tajchner L, Larkin JO, Bourke MG, Waldron R, Barry K, Eustace PW. Management of the acute

scrotum in a district general hospital: 10-year experience. Scientifc World Journal. 2009;9:281-286.
3. Montgomery JS, Bloom DA. The diagnosis and management of scrotal masses. Med Clin North Am. 2011;95(1):235-244.
4. Kühn AL, Scortegagna E, Nowitzki KM, Kim YH. Ultrasonography of the scrotum in adults. Ultrasonography. 2016 Jul;35(3):180-197.
5. Gorma B, The Scrotum. Rumack CM, Wilson SR, Charboneau JW et al. Diagnostic Ultrasound. 4 th edi. Philadelphia: Mosby Elsevier;2011:840-77.
6. Rifkin MD, Kurtz AB, Pasto ME. Diagnostic capabilities of high-resolution scrotal ultrasonography: prospective evaluation. J Ultrasound Med 1985;4:13- 9.
7. Carroll BA, Gross DM. High-frequency scrotal sonography. AJR Am J Roentgenol 1983;140:511-5.
8. Gilbert BR., Ultrasound of the Male Genitalia, DOI 10.1007/978-1-4614-7744-0_4
9. Miskin M, Bain J. B- mode ultrasonic examination of the testes. Journal of Clinical Ultrasound, 1974;2:307.
10. Miskin M, Buckspan M and Bain J. Ultrasound examination of scrotal masses. The Journal of Urology, 1997;117:185-8.
11. Chhetri PK, Tayal A, Deka PK. USG in evaluation of patients with scrotal pain Journal of College of Medical Sciences-Nepal, 2012, Vol-8, No-1, 18-22.
12. Tan GH, Arzif M, Shamsul AS, Ho CC, Praveen S, Goh EH, et al. Clinicopathological features and survival of testicular tumours in a Southeast Asian university hospital: a ten-year review. Asian Pac J Cancer Prev 2011;12(10):2727-30.
13. Mukherjee S, Maheshwari V, Khan R, et al. Clinico- radiological and pathological evaluation of extra testicular scrotal lesions. Journal of Cytology / Indian Academy of Cytologists. 2013;30(1):27-32.
14. Patel MB, Goswami HM, Parikh UR, Mehta N. Histo- pathological study of testicular lesions. Gujrat Med J 2015;70(1):41-6.
15. Chauhan A, Mishra S, Jeelani D, Rashid Z. A Clinicopathological & Radiological Evaluation of 100 Cases of Scrotal Swellings with Special Reference to Testicular Tumour in Western Uttar Pradesh. International Journal of Science and Research (IJSR) 2017; Volume 6 :Issue 3; P-2238-2241.