



EVALUATION OF EPIDIDYMOORCHITIS BY HIGH FREQUENCY GRAY SCALE AND COLOR DOPPLER ULTRASONOGRAPHY

Dr. Akhil Sharma*

Junior Resident, Department of Radio-diagnosis, SRMS IMS, Bareilly.
*Corresponding Author

Dr. Sameer R. Verma

Professor & Head, Department of Radio-diagnosis., SRMS IMS, Bareilly.

Dr. Neeraj Prajapati

Professor, Department of Radio-diagnosis. , SRMS IMS, Bareilly.

Dr. Vinod Kumar Mogha

Senior Resident, Department of Radio-diagnosis, SRMS IMS, Bareilly.

ABSTRACT

INTRODUCTION: Ultrasonography is extremely well suited to study of scrotum and its contents. Ultrasound is simple to perform, quick, non-invasive, low cost effective, easily reproducible, widely available and does not involve irradiation of gonads. It is very helpful in differentiating intratesticular and extratesticular pathologies.

Ultrasound is the modality to differentiate solid from cystic lesions of testes and with the introduction of color Doppler, it becomes easier to assess the viability of testis in cases of torsion and guiding the treatment accordingly.

USG is helpful in differentiating torsion/ischaemia of testis from the acute inflammatory pathologies.

Role of other Modalities: CT and MRI have dominated imaging of other regions of the body, they have certain restrictions in evaluation of scrotal diseases. Computed Tomography delivers radiation to gonads, On the contrary, MRI imaging is expensive and not readily obtainable. Radionuclide scan helps in equivocal presentations to assess vascularity within the testis in setting of torsion but its ready availability and cost is the main set back.

AIM: To assess the role of high frequency gray scale and color doppler ultrasonography in evaluation of epididymorchitis.

MATERIAL & METHODS: SAMPLE: 50 cases of scrotal pathology were taken using High-frequency real time gray scale ultrasonography and Color Doppler . Patients were referred to our department for scrotal ultrasonography and Doppler study by department of Urology and department of Surgery of SRMS IMS Bareilly.

RESULTS: In the present study total evaluated cases of epididymorchitis were 15, among them 11 cases were acute and 4 cases were of chronic epididymorchitis.. Majority of cases were having unilateral involvement with 1 case of B/L involvement. USG gray scale found heterogenous echogenicity or reduced echogenicity in acute EPO while the echogenicity was reduced with calcification in chronic EPO. .Doppler study found increased vascularity in majority of cases of acute EPO with reactive hydrocele while vascularity was either normal or increased in chronic EPO without any reactive hydrocele.

CONCLUSION: High-frequency gray scale USG helps in clear evaluation of anatomical structural alterations associated with acute scrotal inflammatory diseases, and color Doppler USG is highly sensitive in diagnosing acute scrotal pathology. In addition, Color Doppler USG accurately differentiates between testicular ischemia and torsion from acute inflammatory diseases in acute painful scrotal conditions.

KEYWORDS : USG; Ultrasonography. B/L; bilateral. C/L, contralateral. EPO, epididymorchitis. sig; significant. ns; non significant.

INTRODUCTION:

Role of ultrasound and its limitations

Ultrasonography is extremely well suited to study of scrotum and its contents. Ultrasound is simple to perform, quick, non-invasive, low cost effective, easily reproducible, widely available and does not involve irradiation of gonads. It is very helpful in differentiating intratesticular and extratesticular pathologies.^{1,2,3}

However in spite of all the advantages, the technique has its limitations sometimes in differentiating non neoplastic lesions from true neoplasm for example segmental infarction when the area is rounded and homogenous mimicks testicular seminoma. Sometimes sarcoidosis mimicks testicular neoplasm⁴.

In obese patients and gaseous abdomen it is difficult to localize undescended testes, massive scrotal wall edema, gross hydrocele also make localization difficult on ultrasound, then MRI in such circumstances is the problem solving tool.

Baring these few limitations ultrasound with color Doppler is a promising tool most of the times in evaluating various scrotal pathologies.

Role of other modalities: CT and MRI have dominated

imaging of other regions of the body, they have certain restrictions in evaluation of scrotal diseases. Computed Tomography delivers radiation to gonads, On the contrary, MRI imaging is expensive and not readily obtainable. Radionuclide scan helps in equivocal presentations to assess vascularity within the testis in setting of torsion but its ready availability and cost is the main set back.^{2,3}

AIM: To assess the role of high frequency gray scale and color doppler ultrasonography in evaluation of epididymorchitis.

MATERIAL & METHODS: Sample:

50 cases of scrotal pathology were taken using High-frequency real time gray scale ultrasonography and Color Doppler . Patients were referred to our department for scrotal ultrasonography and Doppler study by department of Urology and department of Surgery of SRMS IMS Bareilly.

Selection of Cases

INCLUSION CRITERIA:-

- OPD/IPD Patients referred from Hospital with scrotal complaints/diseases

EXCLUSION CRITERIA:-

- Patients with prediagnosed scrotal diseases and follow-up

RESULTS:

The evaluated cases of epididymoorchitis were 15, among them 11 cases were acute and 4 cases were of chronic epididymoorchitis. Majority of cases were having unilateral involvement with 1 case of B/L involvement. Among 4 cases of chronic EPO, 3 cases were of tubercular pathology proven by histology.

Table-1. Gray Scale Evaluation of Epididymorchitis

SERIAL NO.	ECHO PATTERN , COMPARED TO C/L TESTIS.	ACUTE EPIDIDYMOORCHITIS	CHRONIC EPIDIDYMOORCHITIS
1	HYPERECHOIC	2	NIL
2	HYPOECHOIC	3	2
3	ISOECHOIC	NIL	NIL
4	HETEROGENOUS	6	1
5	COMPLEX CYSTIC	NIL	NIL
6	PURELY CYSTIC	NIL	NIL
7	EPIDIDYMAL CALCIFICATION	NIL	NIL
8	TESTICULAR CALCIFICATIONS	NIL	1

p-values for echopattern between acute EPO and chronic EPO.
 Hyperechoic-p-value .0000(P<.01,sig).
 Hypoechoic-p-value .6897(p>.01,ns).
 Isoechoic-p-value (p=1,ns)
 Heterogenous-p-value(.0031,sig.)
 Complex Cystic,Purely Cystic,Epididymal Calcification. p-value (p=1,ns)
 Testicular Calcification. p-value .0000(p<.01,sig)

Table-2. Color Doppler Evaluation of Epididymorchitis

COLOR DOPPLER APPEARANCE COMPARED TO C/L TESTIS	ACUTE EPIDIDYMOORCHITIS	CHRONIC EPIDIDYMOORCHITIS
FOCAL INCREASE IN VASCULARITY	2	2
DIFFUSE INCREASE IN VASCULARITY	8	NIL
FOCAL DECREASE IN VASCULARITY	NIL	NIL
DIFFUSE DECREASE IN VASCULARITY	NIL	NIL
NORMAL VASCULARITY	1	2

p-values Between Acute and Chronic EPO On Color Doppler.
 Focal Increase In Vascularity p-value=1(p>.01,ns)
 Diffuse Increase In Vascularity p-value .0000(p<.01,sig)
 Focal And Diffuse Decrease In Vascularity p-value=1 (p>.01,ns)
 Normal Vascularity p-value .5981(p>.01,ns)

DISCUSSION:

Of 11 cases of acute Epididymo-orchitis, we observed diffuse hypoechoogenicity with diffuse increase in vascularity in 8 cases, 2 case showed diffuse heterogenous echotexture, 1 case was normal echotexture, 2 cases showed focal increase in vascularity, one case showed normal vascularity, and size of epididymis was increased in 8 cases. These findings are similar to the findings of Horstman et al⁵, in their study of 45 cases (51 hemiscrotum), Farriol et al⁶, in their study of 11 cases 20.

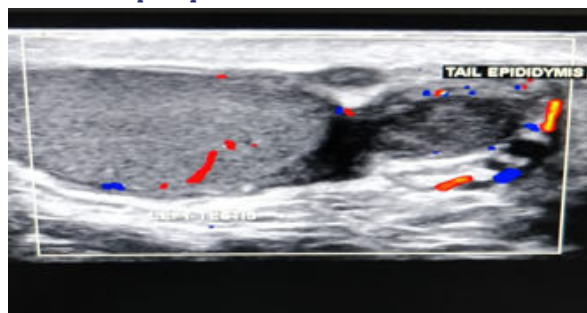
In the present study only one case of bilateral acute orchitis and bilateral chronic orchitis was observed showed diffuse involvement. On high frequency US sonography, diffuse involvement appeared as area of hypoechoogenicity. On color Doppler sonography, showed increased vascularity in the areas of areas of hypoechoogenicity in acute orchitis and normal vascularity in chronic orchitis. These findings are similar to the findings of Horstman et al⁵, in their study of 45

cases (51 hemiscrotum), Farriol et al⁶, in their study of 11 cases.

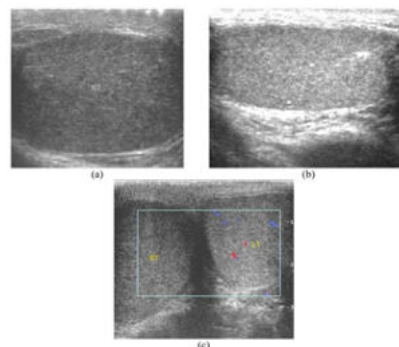
In the present study we noted chronic Epididymo-orchitis in 4 cases. Of these, 2 cases were having rt side involvement, 2 cases were having lt sided involvement. On High-frequency US sonography, we observed diffuse increase in size of epididymis with normal testicular size in 4 cases. There was heterogenous echotexture in 4 cases. There was evidence of testicular microcalcification in 1 case and evolving testicular abscess in one case. On color Doppler sonography, there was evidence of focal increase in vascularity in 2 cases, normal vascularity in 2 cases. of 4 cases, 3 cases were proven to be of tubercular etiology, proven by histopathology and associated chest X-ray finding.

High-frequency US sonography and color Doppler sonography findings are in similarity with study Aysel Turkvatum⁷ and KIM S H et al⁸

Left chronic epididymorchitis



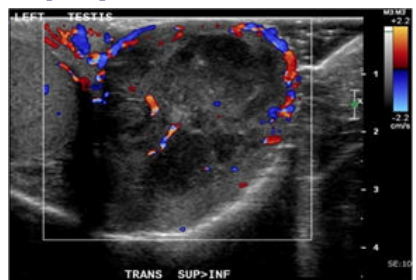
Right epididymorchitis in comparison to left



Rt. acute epididymorchitis



Left chronic epididymorchitis(tubercular)



CONCLUSION:

USG gray scale found heterogenous echogenicity or reduced echogenicity in acute EPO while the echogenicity was reduced with calcification in chronic EPO. Doppler study found increased vascularity in majority of cases of acute EPO with reactive hydrocele while vascularity was either normal or increased in chronic EPO without any reactive hydrocele, it helps in differentiating inflammatory pathology from testicular torsion.

REFERENCES:

1. **Miskin M and Bain J.** B-mode ultrasonic examination of the testes. *Journal of Clinical Ultrasound*, 1974; 2: 307.
2. **Murray Miskin, Martin Bucksban and Jerald Bain.** Ultrasonographic examination of scrotal masses. *The Journal of Urology*, 1977; 117(5):185-188
3. **Thomas H Shawker.** B-mode ultrasonic examination of scrotal swellings. *Radiology* 1976; 118(3):417-419.
4. **RADIOGRAPHICS** JULY AUG 2017,37[4]:1085-1098.
5. **William G Horstman, William D Middleton, G Leland Nelson,** Scrotal inflammatory disease: color Doppler US findings, *Radiology* 1991; 179:55-59.
6. **Farriol VG, Comella XP, Agromayor EG, Creixams XS, Martinez De La Torre IB.** Gray-scale and power Doppler sonographic appearances of acute inflammatory diseases of the scrotum. *J Clin Ultrasound*. 2000 Feb;28(2):67-7.
7. **Aysel Turkvatum.** Sonographic findings in tuberculous Epididymo-orchitis, *Journal of clinical US*, 2004; 32:302-305.
8. **Kim SH.** Tubercular epididymitis and Epididymo orchitis *Journal of Urology* 1993;50:81-84.