

ULTRASOUND EXAMINATION OF THE SCROTAL MASSES

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Key Words : Scrotal masses, Ultrasound

Anahtar Terimler : Skrotal kitleler, Ultrasonografi

SUMMARY

The technique of real time ultrasound of the scrotum is described. The examination was performed on 50 patients and 15 normal males at the Medical Faculty Hospital of the Gaziantep University. Given the clinical diagnosis ultrasound proved reliable in almost all cases. In this study ultrasonography of the scrotum has been found to be the most useful method demonstrating testicular diseases.

ÖZET

Skrotal kitlelerin ultrasonografik incelenmesi

Skrotum'un ultrasonik, gerçek zamanlı inceleme tekniği tanımlanmıştır. Bu inceleme G.Ü. Tıp Fakültesi Hastanesine müracaat eden 50 skrotal kitlesi bulunan ve 15 normal erkek şahıs üzerinde yapılmıştır. Tüm olgularda ultrasonik inceleme klinik tanıları doğrulamıştır. Bu çalışmada testiküler patolojilerin ayırt edilmesinde skrotal ultrasonografinin yararlı bir metod olduğu anlaşılmıştır.

INTRODUCTION

Until the mid 1970's, examination of scrotal contents was limited to palpation and transillumination. Often, pathology eluded even the best clinicians, particularly when a hydrocele masked the presence of intratesticular pathology. Frequently, the clinical history and presentation were nonspecific, if not confusing. The advent of ultrasound offered the opportunity for a noninvasive, nonionizing rapid method for scrotal examination.

Scrotal masses at any stage are a great concern to the patient and his physician. We recently tested the effectiveness of diagnostic ultrasound in 50 men with scrotal masses and 15 normal males. Ultrasonography is a non-invasive technique and has no risk to the patient, it has found wide acceptance (1,5). Hydroceles, epididymitis, palpable and occult testicular tumours and other testicular pathologies are well observable by ultrasonography (1,8). We report our experience based on 50 patients and 15 normal males carried out in the last 12 months period..

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MATERIAL AND METHOD

50 patients with scrotal masses and 15 normal males admitted to the Şahinbey Hospital of Gaziantep University. Patients' age ranged from 9 to 68 years with a mean age of 34.5 years. Normal male age ranged from 18 to 36 years with a mean age of 25.7 years.

The examination was performed by a radiologist using general purpose real time Siemens Sonoline AC and SL-1 linear scanners 5 MHz and sector scanners 5-7.5 MHz probes.

The radiologist stabilized a well lubricated scrotum with one hand, while performing the ultrasonic cuts with the other hand. The patient was examined in the supine position. A series of longitudinal, transverse and oblique scans was obtained.

RESULTS

The ultrasound findings and final clinical diagnosis are summarised in the Table.

Table I. Scrotal Ultrasound Results in 50 Patients and 15 Normal Males.

Ultrasound Findings		Final Diagnosis	
Normal	15	Normal	15
Testicular Abnormality			
Mass arising or replacing testis	3	Seminoma	2*
		Teratocarcinoma	1*
Abnormal testicular echo pattern and enlarged epididymis	5	Epididymo-orchitis	5
Hypoechoic well demarcated solid nodules without capsules	4	Orchitis (due to brucellosis)	4
Small testis with normal echo pattern	5	Atrophy	3+2*
Extratesticular Abnormality			
Enlarged epididymis	10	Epididymitis	10
Fluid collection around normal testis	12	Simple Hydrocele	5+7*
Single or multiple round or oval cyst	6	Epididymal cyst	2+2*
		Spermacotele	2*
Blood surrounding intact testis	1	Scrotal haematoma	1
Bowel gas in scrotum	4	Scrotal hernia	2+2*

*Denotes surgical or histological diagnosis, the rest of the final diagnosis are based on clinical assessment and follow-up.

The normal testis has a smooth, oval outline and homogeneous echo pattern (Fig.1). A small amount of fluid can often be seen adjacent to the upper pole of the testis. The head of the epididymis is seen as an area of relatively bright echoes above the upper pole of the testis. The body and tail of the epididymis are not usually visible in normal state.

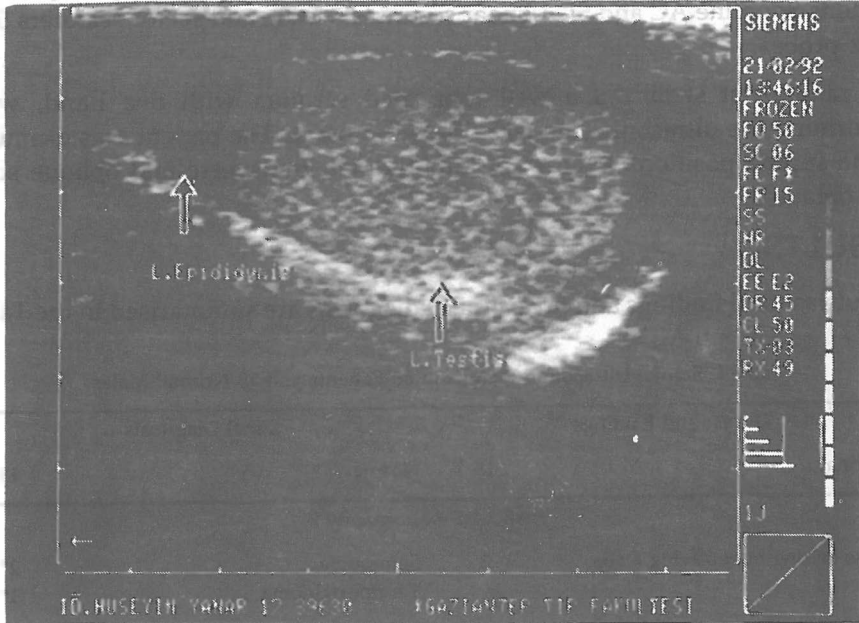


Fig.1. Normal testis with head of epididymis above the upper pole.
Longitudinal scan.

Ultrasound examination may show an alteration since, echopattern or reflectivity of the testis and epididymis may show the presence of fluid collections and overlying soft tissue changes.

Clinical examination is often difficult in acute inflammatory conditions of the scrotum but ultrasound examination may easily be carried out and non of the patients refused the examination. The most common intrascrotal inflammation is epididymitis (Fig.2). It appears sonographically as uniform enlargement of the epididymis and is most evident in the globus major. Compared to normal, the texture is less echodense. In chronic epididymitis the epididymis is very echodense and can contain calcium and shadowing (Fig.3).

In three of four patients with the diagnosis orchitis (due to brucellosis), hypoechoic well demarcated, solid nodules without capsules measuring 1.5, 1.2

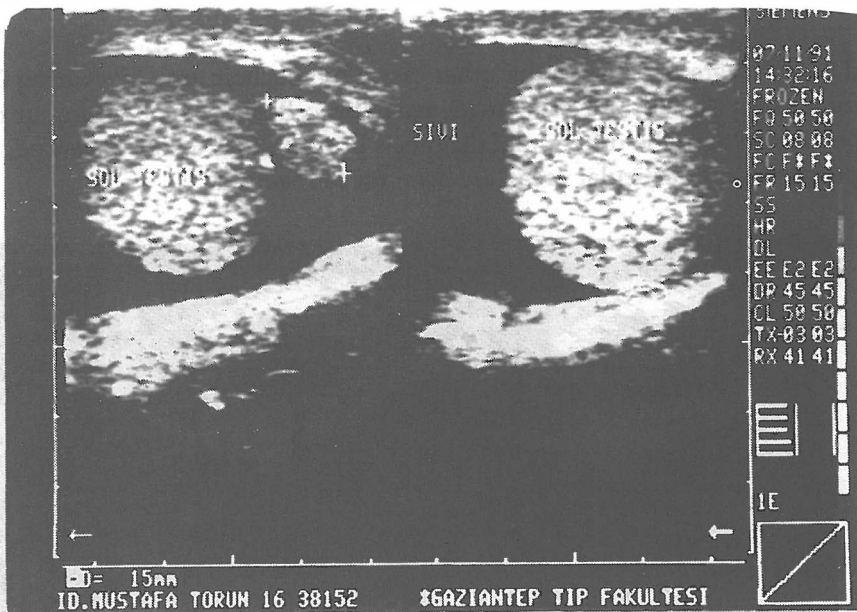


Fig.2. Acute epididymitis. The epididymis is enlarged and there is swelling of the overlying soft tissues. Longitudinal scan.

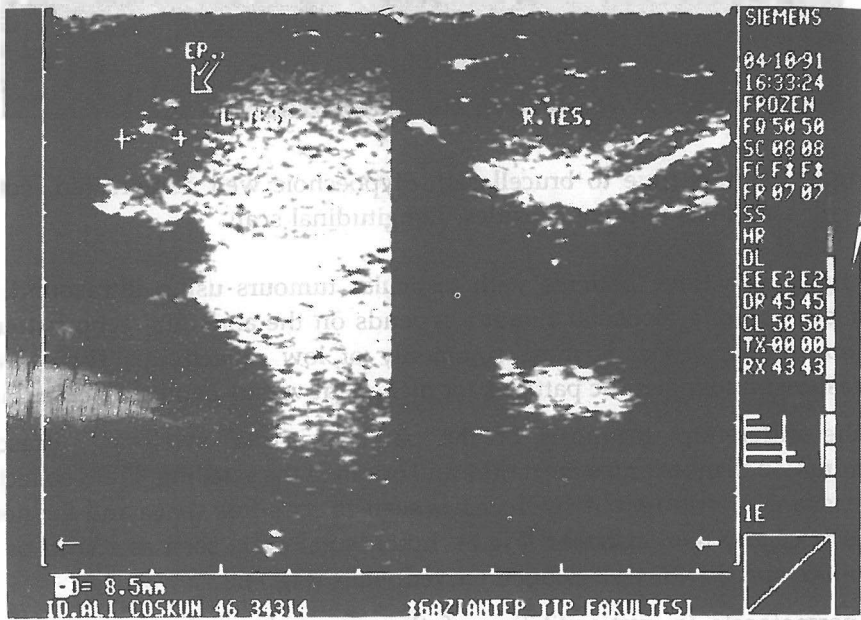


Fig.3. Chronic epididymitis. The epididymis is enlarged, and very echogenic and contains calcium and shadowing. Longitudinal scan.

and 3.0 cm were present. In the other case a hypoechoic area measuring 0.5 cm were present (Fig.4). Since the incidence of brucellosis is frequent in our region we believe that in the differential diagnosis brucellosis is to be concerned, when hypoechoic intratesticular areas are seen on ultrasound.

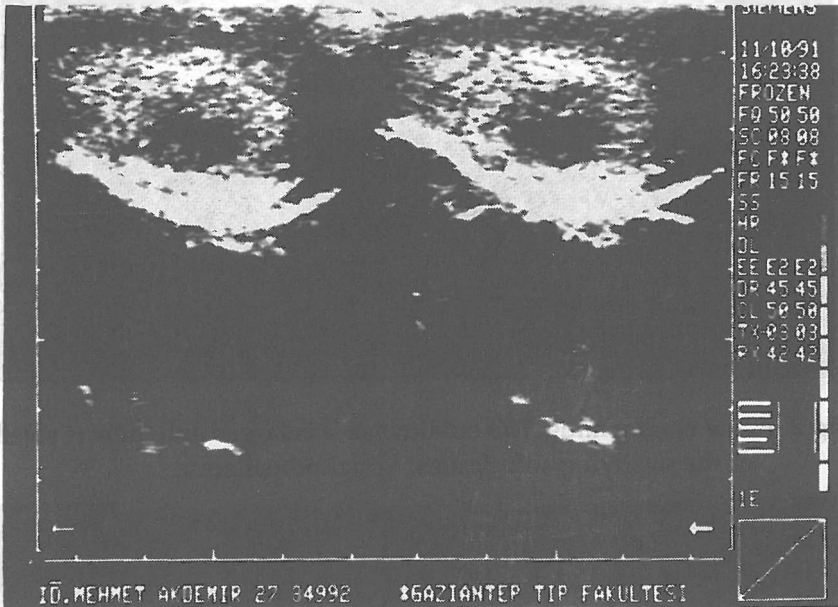


Fig.4. Orchitis (due to brucellosis). Hypoechoic well demarcated, solid nodules without capsules. Longitudinal scan.

We have seen three patients with testicular tumours using ultrasound. The demonstration of a testicular tumour depends on the abnormal echo pattern of tumour tissue, which is most commonly of low reflectivity. There are no characteristic sonographic patterns for malignant versus benign disease (Fig.5).

In the differential diagnosis of the painless scrotal swelling, ultrasound examination demonstrates the nature and origin of the swelling. Fluid collections are easily demonstrated. A hydrocele is seen as echo-free space and the normal testis is clearly demonstrated (Fig.6). Epididymal cysts seen as round or oval echo-free space with well-defined curved walls (Fig.7).

A spermatocele is cystic dilation of the spermatic cord since it does not invaginate the tunica vaginalis, it appears cephalad to the testis as a loculated fluid collection often containing low-level echoes (Fig.8).

In cases of scrotal trauma, ultrasound examination has demonstrated scrotal haematoma and the state of the underlying testis (Fig.9).

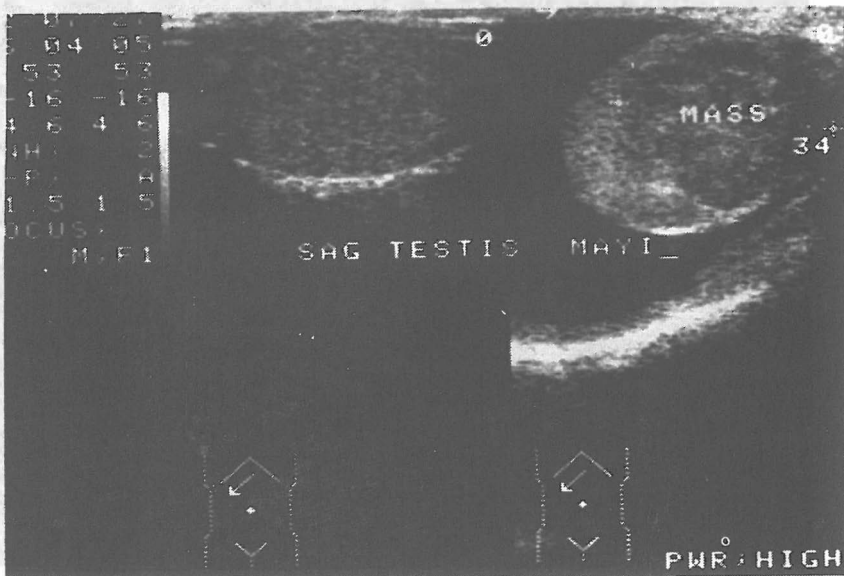


Fig.5. Teratocarcinoma. Mass arising and replacing testis. Longitudinal scan.

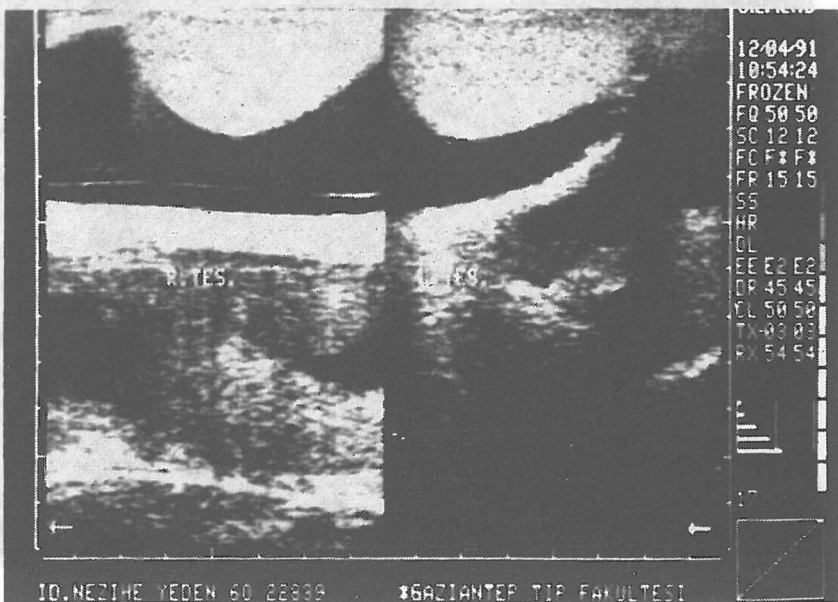


Fig.6. Hydrocele. The normal testis is clearly visualised. Longitudinal scan.

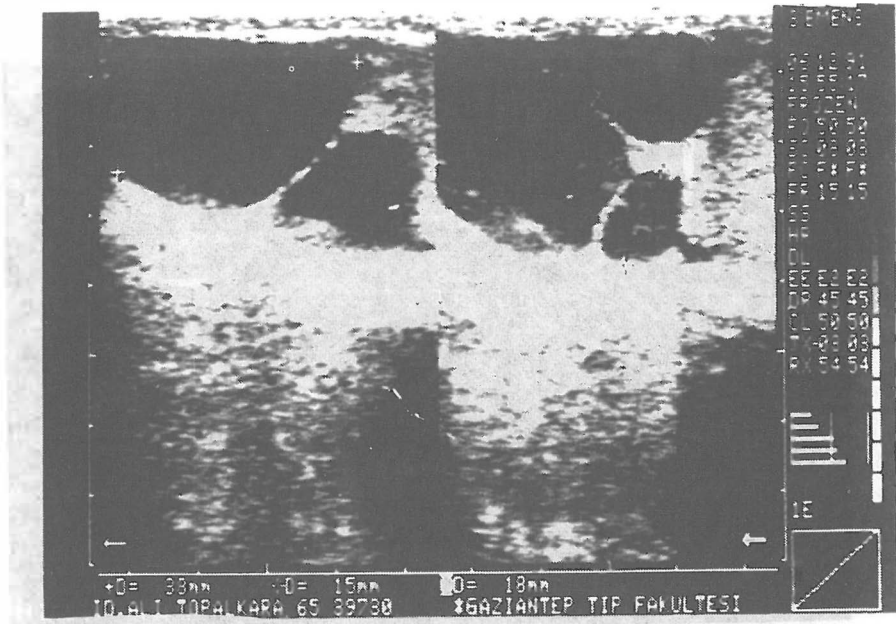


Fig.7. Epididymal cyst. Multiple round cysts. Longitudinal scan.

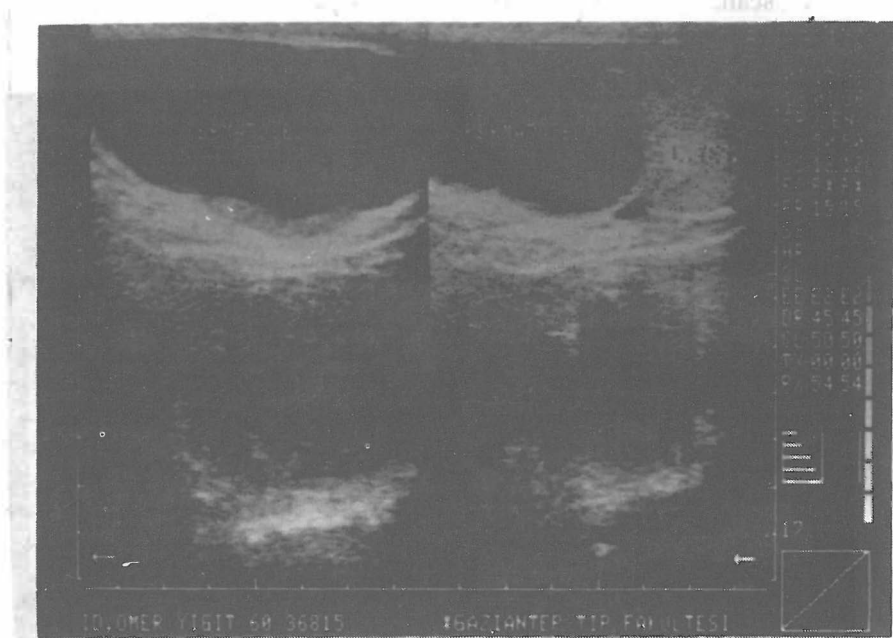


Fig.8. Spermatocele. Single cyst around of the spermatic cord. Longitudinal scan.

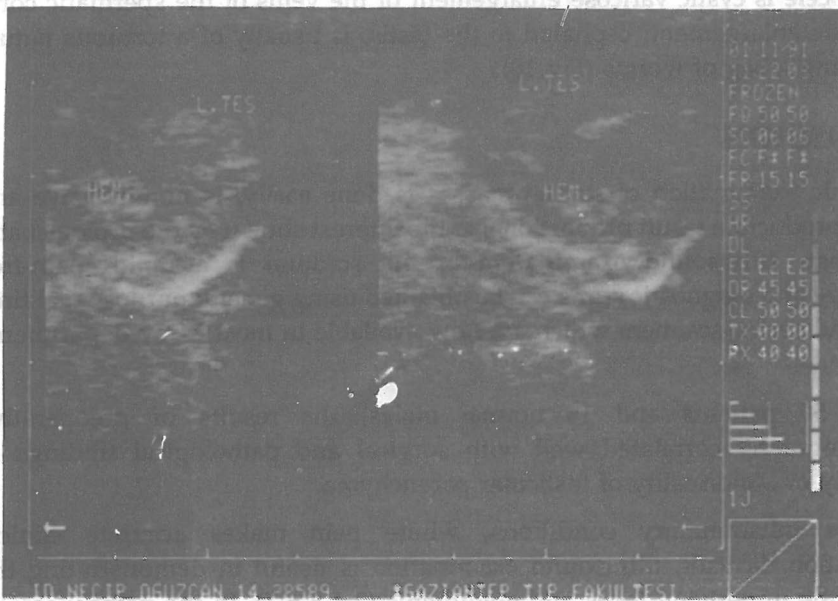


Fig.9. Scrotal haematoma. Blood surrounding intact testis. Longitudinal scan.

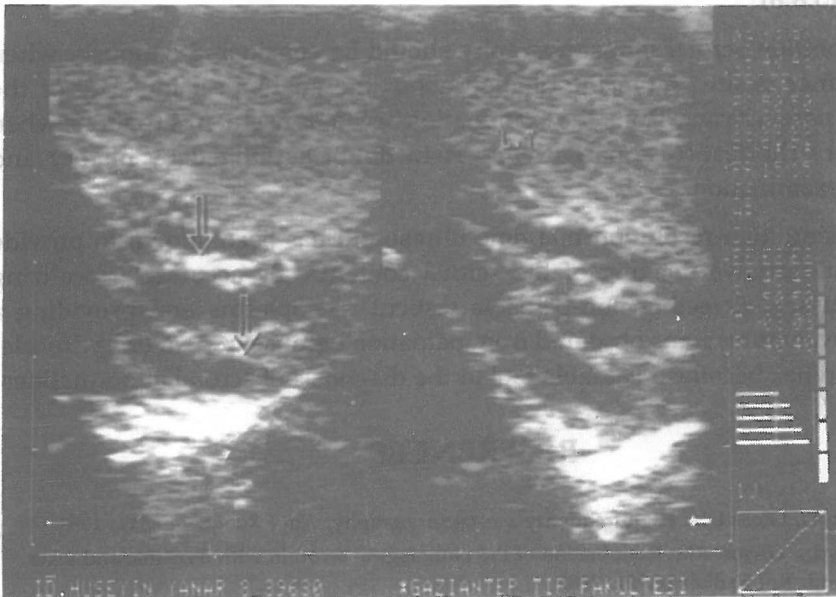


Fig.10. Varicocele. The cystic enlargement, cephalad to the testis. Longitudinal scan.

A varicocele is cystic varicose enlargement of the veins of the spermatic cord. The cystic enlargement, cephalad to the testis, is usually of a tortuous nature resembling a bag of worms (Fig.10).

DISCUSSION

Ultrasonic examination of scrotal masses is done easily, is non-invasive and gives reproducible result proportional to the interest shown by the urologist and radiologist. Ultrasound examination of the scrotum is a rapid, pain-free procedure and diagnostic scans can be obtained using general purpose real time linear and sector scanners which are now available in most X-ray departments (1-5).

In our 50 patients and 15 normal males, the results of preoperative ultrasonography correlated well with surgical and pathological findings of normality or abnormality of testicular parenchyma.

In acute inflammatory conditions, where pain makes accurate clinical examination difficult, ultrasound examination is useful in demonstrating the state of the underlying testis and epididymis (2,4,5,6,7). In the painful scrotal swelling, where the testis cannot be palpated satisfactorily, ultrasound examination demonstrates with a high degree of accuracy whether the origin of swelling is testicular or extratesticular, and the fluid or solid nature of the swelling (5,6,8).

High resolution scrotal ultrasonography should be considered seriously when the examiner desires more information about the anatomical integrity of the testicular parenchyma. Thus, the examination becomes useful in situations when integrity of the testicular parenchyma is in doubt as judged by history and physical examination.

In conclusion high-resolution real time ultrasound has been shown to provide rapid, non-invasive imaging of the scrotal contents. By accurately localizing scrotal masses, detecting non-palpable testicular neoplasms and providing a mean of evaluating glands obscured from palpation because of pain or hydrocele, ultrasound has become a valuable tool in the diagnosis of scrotal abnormalities.

REFERENCES

- 1- Carroll BA., Gross DM: High-frequency scrotal sonography. Am J Roent. 140,511, 1983
- 2- Forsbery L., Olsson AM: Examination of the pathological scrotum with dynamic and static ultrasound. Br J Radiol. 56,921, 1983
- 3- Leopold GR., Woo VL., Scheible FW., Nachtsheim DA Gosinky B: High resolution ultrasonography of scrotal pathology. Radiology. 131,719, 1979
- 4- Orr DP., Skolnick ML: Sonographic examination of the abnormal scrotum. Clin Radiol.31,109,1980

- 5- Michell MJ., Thompson PM., Yates Bell AJ., Pryor JP., Packham DA: Ultrasound examination of the scrotum. *Br J Urol.* 57, 346, 1985
- 6- Fournier GR., Laing FC., Jeffrey RB. and McAnich JW.: High resolution scrotal sonography: A highly sensitive but nonspecific diagnostic technique. *J Urol.* 134,490, 1985
- 7- Nachtsheim DA., Scheibe FW., Gosinky B: Ultrasonography of testicular tumors.. *J Urol.* 129,978, 1983
- 8- Gottesman JE., Sample WF., Skinner DG., Ehrlich RM: Diagnostic ultrasound in the evaluation of scrotal masses. *J Urol.* 118,601, 1977