

SCROTAL PATHOLOGIES;

Role of high resolution & Doppler ultrasound in evaluation

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ABSTRACT... Objectives: To assess common presenting complaints & the role of Grey Scale and Doppler ultrasound in evaluation of scrotal pathologies. **Design:** Cross sectional study, **Setting:** Khyber X rays, Khyber Medical Centre, Peshawar. **Period:** July 2011 to December 2011. **Material and Methods:** Data from patients presenting for evaluation of scrotal pathologies was analyzed for presenting complaints and ultrasound findings according to objectives of the study. **Results:** In total 210 cases were included in the study. The age wise categorization included pediatric population (14.3%) adult population (80.9%) and geriatric population (4.3%). Pain was the most common presenting feature in all age. Other major presenting complaints included swelling, absent testis, history of trauma, lower urinary tract symptoms (LUTS), and infertility. Hydrocele was the most common finding overall. Other major ultrasound finding included varicocele, epididymo-orchitis, spermatocele, atrophic testis, undescended testis tumors and complications of trauma. **Conclusions:** Scrotal pathologies are among the frequently encountered problems in our region. Ultrasound is a sensitive and useful tool for evaluation of scrotal pathologies.

Key words: Scrotum, Testis, Hydrocele, Ultrasound, Doppler, Scrotal Pain, Infertility

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INTRODUCTION

Scrotal Pathologies are among the frequently encountered entities in medical practice. They widely encompass acute inflammation, torsion & ischemia, varicocele, venous thrombosis, tumors, hydrocele, trauma and male factor infertility¹. The spectrum of scrotal pathologies varies with age (e.g. congenital anomalies & trauma being frequent in childhood, trauma & infertility in adulthood and neoplasm in elderly).

Ultrasound is a frequently used diagnostic modality for evaluation of scrotal pathologies. It has been recognized as the first step in diagnosis of scrotal problems as outpatient as well as emergency settings². There are a number of studies validating use of ultrasound in diagnosis of acute scrotum (torsion, epididymo-orchitis etc.), evaluation of cystic and solid growths, trauma and male factor infertility³⁻⁸. In a study assessing role of ultrasound in emergency setting it was able to differentiate between emergent surgical and non surgical cases of acute scrotum in up to 84% of cases. Hence its use is proposed for triage of patients with acute scrotal pain in emergency

department^{6,9,10}.

Ultrasound has the advantage of being quick and cheap modality with no involvement of ionizing radiation. Gray scale, Color Doppler and Power Doppler all retain their significance in diagnosis of scrotal pathologies¹¹. Despite of latest developments in field of genitourinary imaging like Elastography and Magnetic Resonance imaging, ultrasound still retains original significance¹²⁻¹⁵.

The sensitivity of color Doppler in scrotal pathologies is almost 100%. In cases of torsion of testis or epididymis, the sensitivity is 77 – 100% and specificity is 86 – 100%. In diagnosis of varicose veins ultrasound has reported sensitivity of 92.2% and specificity of 92.7%. The objectives of this study were to have an insight of common scrotal pathologies that exist in our region, their common presenting features and common ultrasound findings on evaluation of patients with scrotal complaints¹⁶⁻¹⁹.

MATERIAL & METHODS

This study is a cross sectional study carried out from

July 2011 to December 2011. The site for this study was Khyber X Rays, Khyber Medical Centre, Peshawar. Most of the patients were referred by Urologists followed by General Surgeons. A detailed history of presenting complaints was obtained prior to conducting ultrasound examination. All patients were evaluated by Toshiba Nemio 20 ® Doppler ultrasound scanner, starting with 4.2MHz and later proceeding to 11 MHz frequency transducer. Power and Color Doppler was frequently employed in evaluating acute scrotum, trauma and infertility. Results were recorded in a standardized Microsoft Excel spreadsheet. SPSS (version 17) statistical software was used for data analysis. Statistical analysis was mainly done using prevalence ratios.

RESULTS

A total of 210 cases were evaluated. The age of cases ranged from 15 days to 80 years with a mean age of 30.8 years. Pain with or without swelling was found to be the most common presenting complaint with hydrocele (either primary or reactive) being most common ultrasound finding.

Among the 31 patients pediatric age group (less than 16 years), Pain & swelling were most common presenting complaint with 20 (64.5%) of cases followed by absent testis in 12 (38.7%) of cases. Ultrasound findings in pediatric age group included hydrocele in 9 (29.0%) followed by undescended testis in 8 (25.8%), hematoma in 2 (6.5%) and testicular tumor, lymph edema of scrotum & spermatocele with one case each (3.2%) (Figure 1)

The most common presenting complaint in Adult population (n = 170) was Pain with 107 cases (62.9%) followed by swelling in 86 (50.6%), Lower Urinary tract symptoms in 12 (7.1%), history of scrotal trauma with 10 (5.9%), Infertility with 8 (4.7%), absent testis with 5 (2.9%) and atrophic testis with 4 (2.4%) cases. Ultrasound findings in this population found Varicocele to be most common pathology with 39

(22.9%) followed in order by hydrocele in 37 (21.8%), epididymo-orchitis with 28 (16.5%), atrophic testis with 20 (11.8%), spermatocele with 17 (10%) Testicular tumors with 2 (1.2%), Abscess and hematoma with one case each (0.8%). (Figure 2)

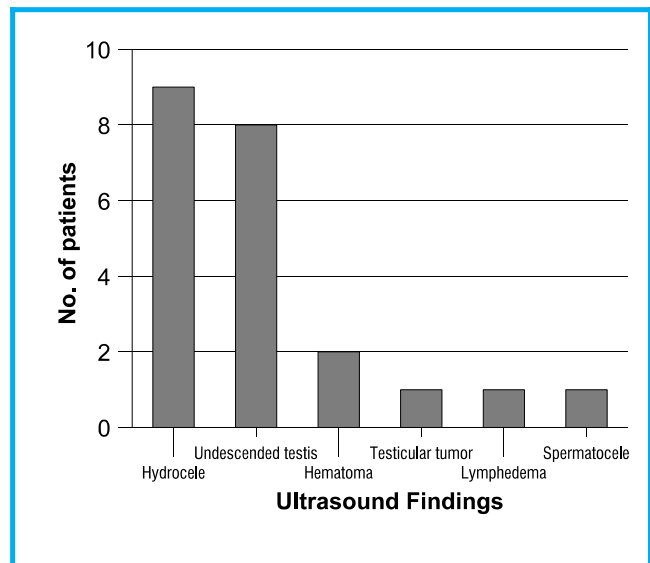


Fig-1. Common ultrasound Findings in Pediatric Patients (n = 31)

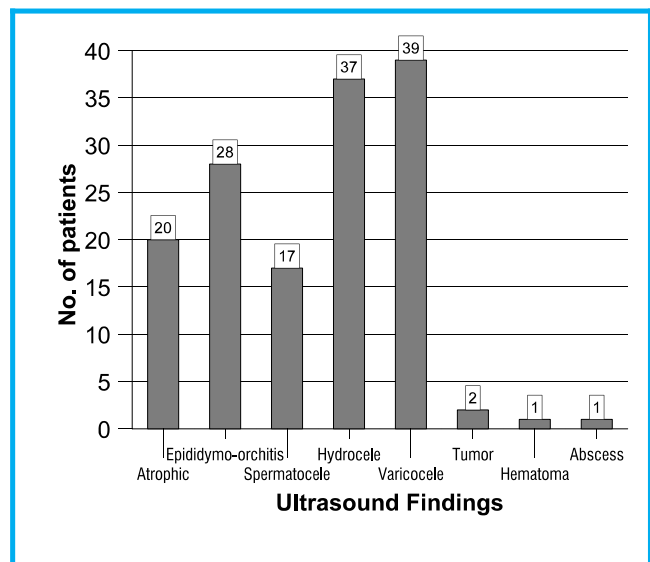


Fig-2. Common ultrasound Findings in Adult Patients (n = 170)

Presenting features in geriatric population (age 65 and older) (n = 9) included Lower urinary tract symptoms with 4 (44.4%) followed by Painless swelling in 4 (44.4%) and pain with 1 case (11.1%). Ultrasound findings revealed hydrocele to be most common finding with 5 cases (55.5%) followed by epididymo-orchitis, spermatocele and testicular tumor with one case (11.1%) each.

DISCUSSION

The average age in our study was 30.8 years which was close to figure reported by Khatri et al. from Karachi (38.5 years)²⁰.

14.8% of cases in our study comprised of pediatric population. Ultrasound is reported to be useful and first line modality in diagnosing scrotal pathologies in children. As reported by Sandor et al. some cases of acute scrotum (e.g. epididymo-orchitis) are managed conservatively and need to be differentiated from surgical emergencies (e.g. torsion)^{2,4,9}. Schalamon et al. reported that Doppler ultrasound was able to correctly differentiate between surgical emergencies and non surgical scrotal pathologies in 84% of cases^{10,21}.

The most common ultrasound finding in adult population in our study was varicocele followed by hydrocele, epididymo-orchitis and spermatocele. This was a good reflection of most common findings upon ultrasound examination reported by Khatri et al. (hydrocele, varicocele and cysts)²⁰. However prevalence of tumors were much higher in data from Karachi (17.1%) as compared to our data (1.4% of total patients)²⁰. Ultrasound is the first choice of imaging in evaluation of cystic lesions of scrotum⁷. Results from our study were slightly different from that reported by Rizvi et al. from India in which they found epididymo-orchitis followed by hydrocele and varicocele to be most common ultrasound findings²².

History of scrotal trauma was present in 5.9% of adult

patients. Ultrasound is efficacious in detection of hematoma, hydrocele, hematocele, testicular fracture and testicular rupture. It also demonstrates rupture of tunica albuginea and testicular contusions⁶.

Infertility was the primary presenting complaint in 4.7% of adult patients. Frequent causes of male factor infertility as detected by ultrasound include varicocele, testicular microlithiasis, epididymal cysts and testicular cysts⁸. Schurich et al reported that there was direct correlation of testicular volume as measured by B mode ultrasound with testicular function. Furthermore increased Doppler indices of Resistive index (R.I) and Pulsatility Index (P.I) of capsular branches of testicular arteries may be indicator of impaired testicular microcirculation. Perfusion mapping and contrast pulse sequencing are some of the new imaging methods that are being introduced for evaluation of male factor infertility^{5,11}.

CONCLUSIONS

B Mode, Power & Color Doppler ultrasound remains to be quick, non invasive and cheap modality for evaluation of both emergency and non emergent scrotal pathologies.

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Never deprive someone of hope;
it might be all they have.

Unknown