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" CLINICAL, RADIOLOGICAL, CYTOLOGICAL AND MICROBIOLOGICAL ASSESSMENT OF EPIDIDYMAL LESIONS"

General Surgery

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ABSTRACT

Introduction Most of the epididymal lesions are erroneously diagnosed and treated as epididymitis in our clinical practice. Therefore this study was undertaken to analyze the usefulness of a combination of clinical, radiological, cytological and microbiological assessment in establishing the accurate diagnosis of epididymal lesion.

Aim A study for clinical, ultrasonographic, cytological and microbiological assessment and their correlation with each other in establishing the accurate diagnosis of epididymal lesion..

Objectives To assess the diagnostic significance of clinical, radiological, cytological and microbiological methods and their correlation in establishing the accurate diagnosis of epididymal lesion.

Methodology This cross-sectional study was carried out in Departments of Surgery, Radiology, Pathology and Microbiology, University College of Medical sciences and GTB Hospital over the period of 2 years. During this period, we were able to accommodate 75 patients in the study, who presented with clinical features of epididymitis. Radiological assessment was done on the day of the first visit to the hospital. For cytological assessment ultrasound-guided FNAC and microbiological assessment was done from the aspirate remaining after making cytology slide.

Statistical analysis Data analysis was done using SPSS statistical software. Kappa statistics was used to find the degree of agreement or concordance between clinical, radiological, cytological and microbiological findings.

Results Clinically 71 patients were diagnosed as Epididymitis. Radiologically, epididymitis was found in only 32 patients. Only in 38 patients out of 75, a definite diagnosis could be made on cytology. The microbiological examination did not give any positive results.

Conclusion Epididymitis is a clinical diagnosis, which can be corroborated with a defined etiology through radiological, cytological and microbiological assessment.

KEYWORDS

Epididymal lesion, Epididymitis, Assessment, Etiology,

Introduction

Every day in our clinical practice we come across a number of patients with complaints relating to their scrotum and its content. Epididymitis and epididymorchitis are the most common causes of painful scrotal swelling over 18 years of age[1] and are the fifth most common entity in urological diseases. Epididymitis itself constitutes approximately 20% of urological diagnosis in clinical practice[2]; however, other scrotal conditions such as an epididymal cyst, spermatocele, varicocele, spermatic granuloma may be wrongly diagnosed and treated as epididymitis. Apart from clinical examination, ultrasound and fine needle aspiration cytology (FNAC) are frequently employed for assessment of these lesions. The microbiological assessment of the epididymal aspirate is not a routine practice. The causative organism present in the cases of urinary tract infections is presumed to be associated with epididymitis.

Therefore, this study was undertaken to analyze the usefulness of a combination of clinical, radiological, cytological and microbiological assessment of epididymal aspirate in establishing the accurate diagnosis of epididymal lesions.

AIM

A cross-sectional study for clinical, ultrasonographic, cytological and microbiological assessment and their correlation with each other in establishing the accurate diagnosis of epididymitis.

OBJECTIVES

- To assess the diagnostic significance of clinical, radiological, cytological and microbiological methods and their correlation in establishing the accurate diagnosis of epididymitis
- To define the etiology of epididymitis through examination of semen and filarial serology along with smears
- Cultures were grown from an epididymal aspirate of patients that were clinically diagnosed as epididymitis for identifying the causative organism

MATERIALS AND METHODS

This cross-sectional study was carried out in Departments of Surgery, Radiology, Pathology and Microbiology, University College of Medical sciences (University of Delhi) and Guru Teg Bahadur Hospital over the period of 2 years. During this period, we were able to accommodate 75 patients in the study, by including men above 18 years of age who presented with clinical features of epididymitis. Patients with an infectious or an ulcerative lesion of the scrotal wall, malignancy of testis or penis, recent history of surgery in the inguinoscrotal region and those not consenting to give semen sample were excluded.

All patients underwent thorough clinical examination by a Surgeon at the very first contact visit. Radiological assessment was done by an experienced sonologist using Grey scale ultrasonography along with Colour Doppler of the scrotum on the day of the first visit to the hospital. For cytological assessment ultrasound-guided FNAC was carried out by an established method, using 23 gauze needle and a 20 ml syringe in supine position[3]. All fine needle aspiration slides were air dried and stained with May-Grunwald Giemsa stain and examined by the pathologist / cytologist[3]. Microbiological assessment was done from the aspirate remaining after making cytology slide; it was dissolved in 1 ml. of sterile normal saline and equally distributed for Gram staining[4], Ziehl Neelsen staining[5], culture for aerobes and anaerobes, culture for AFB. Apart from these investigations, other tests such as Filarial serology and Semen analysis (Sperm count, Sperm motility, Pus cells, Culture) were also sent. Symptomatic treatment of the patients was started after sending all investigations to the respective departments. Approval for the study was taken from the ethical committee of the University college of Medical Sciences, Delhi.

Data analysis was done using SPSS statistical software. Kappa statistics was used to find the degree of agreement or concordance between clinical, radiological, cytological and microbiological findings. ANOVA was used to compare the different parameters in

different groups of patients. Tukey's, McNemar test and Chi-square test were used to find association and comparison wherever needed.

OBSERVATIONS AND RESULTS

The age of the patients included in the study ranged from 18 to 70 years, with the mean being 30.84 years. More than half of the patients were in their third decade of life. Scrotal pain and swelling were the two main presenting complaints of these patients. Seventy-one of the 75 patients presented with scrotal pain and swelling, whereas four patients presented with only scrotal pain sans swelling. On the basis of duration of pain three groups were made, acute with duration of pain less than 15 days, subacute with 15 days to 3 months, and chronic with more than 3 months. The pain was present in all the patients. Pain on VAS score ranged from 2 to 8 and the mean was 5. Mean VAS in the acute group was 5.89±1.44, in subacute group 4.87±1.02 and in chronic group 4.6±1.28. The Difference in pain was significant between Acute and subacute group (p=0.012) and between subacute and chronic group (p=0.002). Most of the patients (53%) had a lesion of size 1 cm. in largest dimension, while comparing the VAS and size of the lesion, no statistically significant relation was observed (p=0.732).

Clinically 71 patients were diagnosed as Epididymitis and the remaining four as an epididymal cyst (Table-1). Out of the 71 patients of epididymitis, 53 exclusively had involvement of epididymis and the remaining 18 had other associated findings such as orchitis in 10 patients, a cyst in 3 patients, funiculitis in 2 patients and inguinal hernia in 3 patients. Radiologically, epididymitis was found in only 32 patients (Table-1). Among these 32 patients, 18 had only epididymitis, whereas 14 had additional findings such as hydrocele in 11 patients, orchitis in 2 patients and funiculitis in 1 patient. Of the remaining 43 patients, 13 patients were found to be normal, the epididymal cyst was observed in 12 patients, hydrocele in 13 patients, varicocele in 2 patients, spermatocele in 1 patient, funiculitis in 1 patient and filariasis in 1 patient. Clinically none had a hydrocele as small sized were not well distinguishable.

For cytological diagnosis, USG guided fine needle aspiration was done, however, it did not yield significant material in every patient. Only in 38 patients out of 75, a definite diagnosis could be made on cytology. Rest 37 patients were marked as non-contributory and the various causes were – nil or inadequate aspirate, hemorrhagic aspirate and nonspecific findings on cytology. Of all the cytological diagnosis, some showed a clear evidence of epididymitis and its etiology (direct cytological evidence), whereas others did not explain the epididymal tenderness on clinical examination (Non-epididymitis on cytology) (Table 1).

The microbiological examination was done by examining smears (Gram's stain and ZN stain) and cultures for aerobic, anaerobic and mycobacterial using epididymal aspirate, however, it did not give any positive results. Semen analysis was done for all the 75 patients. Sperm counts were normal in all the patients. Motility of sperms was decreased in two patients. Sixteen patients showed round cells (suggestive of pus cells) on microscopy but when semen culture was done for these patients, no positive results were found. Filarial serology was positive in 3 patients.

While correlating the clinical and radiological diagnosis, it was observed that out of 75 patients, 71 were diagnosed as epididymitis and four as non-epididymitis (epididymal cysts) clinically; whereas only 32 patients were diagnosed as epididymitis on radiology hence in only 45% of patients a radiological diagnosis of epididymitis was present to support the clinical diagnosis. This difference in radiological and clinical diagnosis was found to be statistically significant on McNemar's test. **(p=0.000).** Correlation of clinical and cytological diagnosis revealed that out of 71 clinically diagnosed as epididymitis and four as non-epididymitis, only 27 were diagnosed as epididymitis on cytology of epididymal aspirate. This difference in cytological and clinical diagnosis was found to be statistically significant on McNemar's test.**(p=0.000).** It is to be noted that only four cases were diagnosed as non-epididymitis clinically and this diagnosis was supported both radiologically and cytologically. There were seven cases where the clinical, radiological and cytological diagnosis was same as epididymitis.

DISCUSSION

Although the exact prevalence of epididymal lesions was not calculated in our study but it was observed that scrotal swelling and scrotal pain are the presenting complaints of a large number of patients visiting a surgeon in a tertiary care hospital. The patients included in our study aged between 18 to 70 years with mean

30.84±12.29 years. We had 62% patients in the age group of 29-39 years and 18% patients in 40-59 years age group indicating that in our country epididymitis is more common in younger patients. Patients in our study presented with swelling and pain in scrotum or with only pain in the scrotum. The pain in patients with acute epididymitis was more than in patients either with subacute or chronic epididymitis.

In our study, all the patients had pain in the scrotum and 95% complained of swelling in the scrotum. The size of swelling was comparable in acute, subacute and chronic epididymitis patients, contrary to the belief that acute cases have larger swelling. On comparing the size of the swelling with VAS for pain, no significant relationship was seen. Orchitis was mostly present with acute epididymitis as compared to subacute or chronic cases. Although some studies define epididymitis as tender and enlarged epididymis, but there are no studies defining the palpatory and other clinical findings in detail.

Moreover, there are no specific guidelines or criteria to clinically label a painful scrotum as epididymitis. There are other conditions that may cause tenderness and swelling in the epididymal area such as an infected cyst, spermatocele, spermatic granuloma, etc.; hence, clinically labelling every tender epididymis as epididymitis may not be correct and which may falsely exaggerate the number of cases. Due to this reason, the clinical diagnosis must be put to test by other investigations such as USG doppler, MRI, cytology, and microbiology of aspirates from the epididymis.

Ultrasound & Color Doppler sonography is an excellent technique for imaging the epididymis and testis[6,7,8] and thus was included in our study. On comparing the various radiological findings in patients of acute, subacute and chronic epididymitis, increased vascularity was seen in a significantly large number of patients in the acute group. Thus hyperaemia is a more specific radiological sign of epididymitis.

FNAC is a rapid, easily available, minimally invasive technique for evaluation of nodular lesions of the epididymis. Palpable epididymal nodules are easily accessible to FNAC procedure as described by Shah et al[9] and provide adequate material for cytological and microbi ological examination.[10] To be more accurate in taking the FNA from the epididymis we did the procedure under USG guidance; but still, a significant yield could be obtained in only 38 patients. The various cytological diagnosis made were epididymitis, tubercular epididymitis, epididymal cyst, hydrocele, spermatocele, spermatic granuloma, filariasis and epididymal abscess. Most common diagnosis established was tuberculosis. Like in our study, Viswaroop et al[11,12] performed FNAC in all patients presenting with epididymitis and reported nonspecific inflammation as the commonest lesion followed by the tuberculotic lesion. They concluded that Tubercular epididym itis can be the sole presentation of genitourinary TB and hence FNAC of the epididymis should be performed in all men with suspected epididymal lesion even in the absence of clinical and laboratory markers of renal involvement[12,13]. But in our study nonspecific inflammation was not the commonest diagnosis as the FNAC with minimal signs of inflammation (few leukocytes) were labelled inconclusive and included in the noncontributory group.

To establish the microbial etiology in epididymitis is a problem akin to that encountered in females with salpingitis. Micro-organisms detected in the cervix are not necessarily the cause of the upper tract disease. Similarly, micro-organisms detected in the urethra may not be responsible for epididymitis, though it may seem reasonable to assume that this is so. For greater etiological certainty, however, more complex studies requiring examination not only of urethral specimens but also of epididymal aspirates are needed. In our study culture and smear of the epididymal aspirates were carried out but they did not reveal any positive results. This may be due to the fact that FNA was attempted only once in each patient and the aspirated material was divided into two parts with preference to cytology first and then microbiology leading to inadequate material for processing. The microbiology sample was dissolved in sterile saline and then divided for aerobic, anaerobic, mycobacterial and fungal cultures. This could have significantly reduced the amount of sample available for cultures.

Serology to diagnose filariasis was done in all patients, as it is an important cause of chronic epididymitis and also endemic in many parts of our country. Three patients were found to have a positive filarial serology.

By applying the combination of clinical, radiological and cytological diagnosis in patients with pain in the scrotum with a palpable epididymal lesion, it was seen that the four cases which were clinically not suspected to have epididymitis were also found to be non epididymitis through both radiological and cytological assessments. Thus the three techniques are supportive in excluding epididymitis. The largest number of patients (32) which were clinically labelled as epididymitis had no such evidence on radiology and cytology; further strengthening the fact that we may be over diagnosing epididymitis clinically. The second largest group (22) is of patients who are clinically and radiologically labelled as epididymitis but had no such evidence on cytology; thus enabling to state that radiology is more sensitive than cytology in patients clinically diagnosed as epidid ymitis.

Only in seven patients the clinical, radiological and cytological findings, all together, were suggestive of epididymitis. TB is the most evident diagnosis. Hence we can say that clinical along with radiological and cytological evidence of epididymitis is seen in chronic conditions with tuberculosis being the main etiological factor.

Conclusion

Epididymitis is a disease of young men presenting as tender and enlarged testis. Epididymitis is a clinical diagnosis, based on tendern ess which can be corroborated with a defined etiology through radiological, cytological and microbiological assessment. No single method is complete in itself to establish the cause of this nagging disease having prolonged morbidity.

Table – 1 Comparison of Clinical , Radiological and Cytological diagnosis of Epididymitis

	Criteria for epididymitis	Patients diagnosed as epididymitis	Patients diagnosed as non-epididymitis
Clinical	Tender and thickened firm epididymis	71	04
Radiological	On USG and doppler altered echogenicity along with one of the following - Increased vascularity - Increased size - Calcifications in tail	32	43 (normal findings = 13) (Other diagnosis =30)
cytology	One of the following - Inflammatory cells - Pus cells - AFB - Caseous necrosis - Microfilaria - Spermatocele - Spermatic granuloma	27 (direct evidence- epididymitis 1, TB epididymitis 14, Epididymal abscess 1, Filariasis 1) (Supportive evidence- spermatocele 9, spermatic granuloma 1)	48 (Non contributary =37 where FNA was inadequate and other diagnosis = 11)

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