

Clinical, radiological, cytological, and microbiological assessment of painful extratesticular lesions

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Abstract

Introduction: Most of the painful extratesticular scrotal lesions are erroneously diagnosed and treated 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 this lesion.

Aim: To study the Clinical, Radiological, Cytological and Microbiological assessment of painful extra-testicular lesions and their correlation with each other in establishing the accurate diagnosis of these lesions.

Objectives: The objectives of the study were to assess the diagnostic significance of clinical, radiological, cytological, and microbiological methods and their correlation in establishing the accurate diagnosis of painful extratesticular lesions.

Materials and Methods: 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 pain and swelling in the scrotum and clinically found to have extratesticular swellings. Radiological assessment was done on the 1st day of visit, using Grayscale ultrasonography along with Color Doppler of these lesions. For cytological assessment, ultrasound-guided fine-needle aspiration cytology and microbiological assessment were done from the aspirate remaining after making cytology slide.

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

Results: Clinically 71 patients were found to have tender extratesticular swellings, whereas in four patients, these swellings were nontender on clinical examination. Radiologically, epididymitis was found in 32 patients. Only in 37 patients out of 75, a definite diagnosis could be made on cytology. The microbiological examination did not give any positive results.

Conclusion: Painful extratesticular scrotal lesion often poses a diagnostic dilemma in the mind of treating physician. Clinical findings of these lesions may be corroborated through radiological, cytological, and microbiological assessment in an endeavor to arrive at a definitive diagnosis with a defined etiology.

Keywords: Assessment, epididymitis, etiology, extratesticular lesion, scrotal swelling

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Received: 21.04.2017, **Accepted:** 21.09.2017

| Access this article online | |
|---|-----------------------------------|
| Quick Response Code: | Website: www.urologyannals.com |
|  | DOI: 10.4103/UA.UA_62_17 |

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How to cite this article: Agrawal V, Jha AK, Dahiya D. Clinical, radiological, cytological, and microbiological assessment of painful extratesticular lesions. Urol Ann 2018;10:181-4.

INTRODUCTION

Every day in our clinical practice, we come across some patients with complaints relating to their scrotum and its content. Epididymitis and epididymo-orchitis 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, and spermatic granuloma may be wrongly diagnosed and treated in clinical practice. Apart from clinical examination, ultrasound and fine-needle aspiration cytology (FNAC) may be employed for the assessment of these lesions. The microbiological assessment of the aspirate of this lesion is not a routine practice. The causative organism present in the cases of urinary tract infections is presumed to be associated with epididymitis, which is one of the commonest causes of painful extratesticular scrotal swellings.

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

Aim

To study the Clinical, Radiological, Cytological and Microbiological assessment of painful extra-testicular lesions and their correlation with each other in establishing the accurate diagnosis of these lesions.

Objectives

The objectives of the study were to assess the diagnostic significance of clinical, radiological, cytological, and microbiological methods and their correlation in establishing the accurate diagnosis of painful extratesticular scrotal lesions.

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 were presented with pain and scrotal swelling and clinically found to have extratesticular swellings. Patients with an infectious or an ulcerative lesion of the scrotal wall, malignancy of testis or penis, and recent history of surgery in the inguinoscrotal region were excluded from this study.

All patients underwent thorough clinical examination by a surgeon at the very first visit. Radiological assessment was done on the 1st day of visit by an experienced sonologist using grayscale ultrasonography (USG) along with color Doppler of the scrotum. For cytological assessment, ultrasound-guided FNAC was carried out by an established method, using a 23-gauge needle and a 20 ml syringe in supine position.^[3] All fine-needle aspiration (FNA) slides were air dried and stained with May-Grunwald Giemsa stain and examined by the pathologist cytologist.^[3] The 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 (ZN) staining,^[5] culture for aerobes and anaerobes, and culture for AFB. Apart from these investigations, filarial serology and semen analysis (sperm count, sperm motility, pus cells, and culture) were also sent in these patients. Approval for the study was taken from the Ethical Committee of the University College of Medical Sciences, Delhi.

Data analysis was done using SPSS Version 21. Kappa statistics were 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 test, 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 all these 75 patients. Seventy-one out of the 75 patients had tender extratesticular swellings, whereas in four patients, it was nontender on clinical examination. By duration of pain, three groups were made: acute with duration of pain <15 days comprising 19 patients, subacute with 15 days to 3 months comprising 31 patients, and chronic with >3 months comprising 25 patients. The pain was present in all the patients. Pain on visual analog scale (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 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 ($P = 0.002$). No significant difference was seen between subacute and chronic group ($P = 0.678$). 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, no definitive diagnosis could be established in 71 patients due to the tenderness, whereas in remaining four, a diagnosis of the epididymal cyst was rendered [Table 1]. Radiologically, epididymitis was found in 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 was not well distinguishable.

For cytological diagnosis, USG-guided FNA was done in 75 patients; 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 noncontributory, 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) [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 three patients.

Table 1: Comparison of clinical, radiological, and cytological diagnosis in cases of painful extratesticular lesion

| Clinical | Radiological | Cytology |
|---|--|---|
| 71 patients had tender extratesticular swelling | 32 patients had evidence of epididymitis | Epididymitis - 1 TB epididymitis - 14 Epididymal cyst - 3 Hydrocele - 8 Spermatocele - 9 Spermatoc - 1 Granuloma Epididymal - 1 Abscess Filariasis - 1 Total - 38 |
| 4 had nontender extra-testicular swelling | 43 (normal findings - 13) (other diagnosis - 30) | Noncontributory - 37 (where FNA was inadequate) |

FNA: Fine-needle aspiration, TB: Tuberculosis

While correlating the clinical finding and radiological diagnosis, it was observed that 32 patients were found to have evidence of epididymitis on radiology. Hence, in 45% of patients, a radiological evidence of obvious inflammatory lesion was present to support the tenderness on clinical examination. This difference in radiological and clinical observation was found to be statistically significant on McNemar's test ($P = 0.016$). Correlation of radiological and cytological diagnosis revealed that, out of 32 patients radiologically diagnosed as epididymitis, 27 were diagnosed as epididymitis on cytology. This difference in radiological and cytological diagnosis was found to be statistically significant on McNemar's test ($P = 0.014$). It is to be noted that four cases, which had nontender swellings on clinical examination, were found to have noninflammatory lesion both radiologically and cytologically.

DISCUSSION

In our study, it was observed that scrotal swelling and scrotal pain are the common presenting complaints in these subsets of patients visiting a surgeon in a tertiary care hospital. The patients included in our study aged between 18 and 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, these lesions are more common in younger patients. Patients in our study presented with swelling and pain in the scrotum. The pain in patients in the acute group was more than in patients either with the subacute or chronic group.

In our study, all the patients had a complaint of pain and swelling in the scrotum. Although four patients had nontender swelling on clinical examination and even radiological examination was suggestive of the inflammatory lesion in only 45% of cases. Most of the patients in our study were young laborers doing heavy physical work. The prime mode of their transport was a bicycle, and many of them wear loose clothes which expose their scrotal content to repeated minor trauma. This could be one of the reasons of pain in almost all the patients.

The size of swelling was comparable in an acute, subacute, and chronic group of 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.

Moreover, clinically labeling a painful extratesticular lesion as epididymitis is not justifiable. There are other conditions that may cause tenderness and swelling in the epididymal

area such as an infected cyst, spermatocele, and spermatic granuloma. Due to this reason, the clinical diagnosis must be put to the test by other investigations such as USG Doppler, magnetic resonance imaging, cytology, and microbiology of aspirates from the epididymis.

Ultrasound and color Doppler sonography are an excellent technique for imaging the extratesticular lesions and testis^[6-8] and thus were included in our study. On comparing the various radiological findings in patients of the acute, subacute, and chronic group, increased vascularity of epididymis was seen in a significantly large number of patients in the acute group. Thus, hyperemia 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 microbiological examination.^[10] Although FNAC is generally advocated in the cases of epididymal nodules, we took help of this modality in cases of extratesticular lesions as it is simple, relatively safe, and it can guide the clinician toward a certain diagnosis. To be more accurate in taking the FNA from the extratesticular lesion, we did the procedure under USG guidance; but still, a significant yield could be obtained in only 38 patients. We did not come across any significant complications associated with these procedures. The various cytological diagnoses made were epididymitis, tubercular epididymitis, epididymal cyst, hydrocele, spermatocele, spermatic granuloma, filariasis, and epididymal abscess. Most common diagnosis established was tuberculosis. In a study conducted by Viswaroop *et al.*^[11,12] performed FNAC in all patients presenting with epididymitis and reported nonspecific inflammation was the most common FNAC finding in the cases of epididymitis followed by the tuberculous lesion. FNAC seems to be more useful in cases of chronic epididymitis, epididymal nodules, or suspected cases of malignancy. Considering the various complications associated with this procedure, they should be employed with due diligence and their usefulness in certain conditions.

In our study, culture and smear of the aspirates of these lesions did not reveal any positive results. This may be because 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.

CONCLUSION

Painful extratesticular scrotal lesion often poses a diagnostic dilemma in the mind of treating physician. Clinical findings of these lesions may be corroborated through radiological, cytological, and microbiological assessment in an endeavor to arrive at a definitive diagnosis with a defined etiology.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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