



## Case Series

## Interesting case series on distinct histopathological findings of six cases of epididymo-orchitis

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## ABSTRACT

**Background:** Several clinicopathological illnesses impact the testis and paratesticular area, which are divided into non-neoplastic and neoplastic diseases. Despite the availability of imaging and tumor marker testing, histopathological examination is the primary method for diagnosing testicular lesions. Common indications of orchidectomy for non-neoplastic lesions are cryptorchidism, epididymitis and testicular torsion. Few non- neoplastic lesions present as mimickers of neoplasm with commonest being granulomatous orchitis and AFB positivity detected only in 2.1% of cases with bilateral presentation being rarest.

**Aim:** We report here a series of six cases of epididymo-orchitis to discuss the histopathological spectrum with varied etiologies.

**Cases:** Age of the patients ranged between 33-65yr old males. Amongst six cases, two of them were clinically and radiologically suspected as neoplastic lesions, which were histopathologically diagnosed as granulomatous epididymo-orchitis with one among it showing strong positivity for AFB, and two cases as testicular torsion with orchitis and one of the case was diagnosed as cryptorchid testis with foci of atypical germ cell and last case was reported as mild non-specific orchitis, for surgical castration. In this study, we also noted unilateral presentation being the commonest, specifically of Right side.

**Conclusion:** Knowledge of histopathological spectrum of epididymo-orchitis is of prime importance to detect underlying specific etiology for targeted therapy and prevent undue orchidectomy.

In this study, two cases which were clinically suspected as neoplastic lesions, were confirmed as granulomatous epididymo-orchitis on histopathological examination with one case showing strong AFB positivity.

In this study, we noted late presentation (5th decade) of cryptorchidism with some atypical germ cells which are forerunner of malignancy.

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### 1. Introduction

From benign congenital diseases to life-threatening cancers and acute surgical emergencies, testicular and paratesticular lesions can represent a wide spectrum of medical difficulties.<sup>1</sup> These lesions affect people of all ages, with scrotal swelling and pain being the most common

symptoms.<sup>2</sup> Cryptorchid testis, testicular atrophy, testicular torsion, inflammation, infection such as tuberculosis, infertility, and other non-neoplastic diseases are examples of benign lesions. Testicular cancer accounts for one percent of all male cancers worldwide.<sup>3</sup>

In the absence of epididymitis, orchitis manifests as testicular swelling and pain. The onset is usually abrupt and might be unilateral or bilateral in nature. Fever, nausea, and vomiting are very typical symptoms. Swollen testicles

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with induration, as well as severe discomfort on probing, are common physical findings. In clinical practice, epididymo-orchitis is a common urological illness and one of the most relevant differential diagnosis for acute scrotum.<sup>4</sup> It should be differentiated from testicular torsion – a true urological emergency.<sup>5</sup>

Orchitis are roughly divided into granulomatous and non-granulomatous.<sup>6</sup> Isolated tuberculous epididymo-orchitis can be mistaken for a testicular tumor, especially in people who have never had systemic tuberculosis, posing diagnostic and treatment difficulties.<sup>7</sup>

Adult cryptorchidism is a rare occurrence, occurring in about 0.5-1 percent of the population. Cryptorchidism as a result of epididymo-orchitis is extremely rare, and the surgical team categorized it as an irreducible inguinal hernia when it was first diagnosed.<sup>8</sup> Despite all the modalities of diagnosis, histopathology plays an important role in accurate diagnosis and helps in accurate treatment of the patient.<sup>9</sup>

We here report a series of six cases to discuss the histopathological spectrum of various orchidectomy specimens with different underlying etiologies.

## 2. Materials and Methods

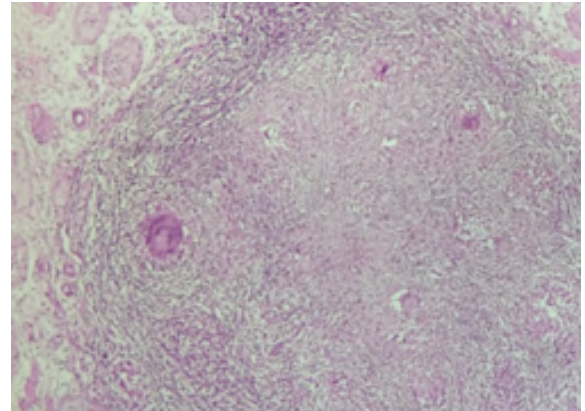
During the months of November 2020, till October 2021, 6 orchidectomy specimens from the Department of General Surgery at Dr. B.R. Ambedkar Medical College and Hospital were received in the Department of Pathology. Detailed clinical data was obtained and the specimens were fixed in 10% buffered formalin. Gross examination of the specimens were carried out, appropriate tissue bits were submitted for processing. After paraffin embedding, tissue blocks were prepared and were cut into 3-4 micron thin sections by rotary microtome. These tissue sections were submitted for routine H&E staining. Stain for Acid Fast Bacilli was done in two cases of granulomatous epididymo-orchitis. Histopathological analysis was performed in conjunction with clinical details to arrive at confirmed diagnosis.

## 3. Case Report

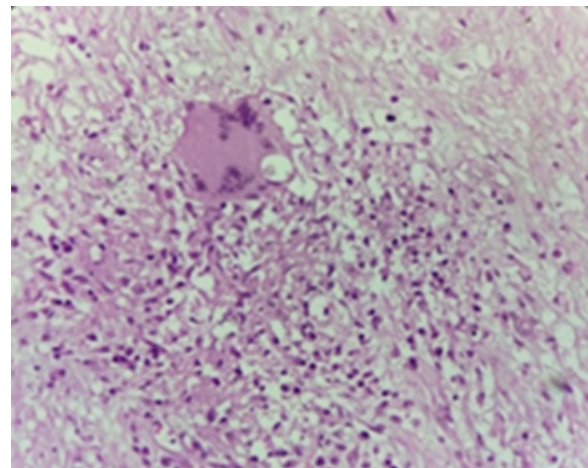
### 3.1. Case 1

A 50 year old male, presented with complaints of urinary incontinence and burning micturition since 6 months. Clinical diagnosis was considered as Carcinoma of bilateral testis. USG revealed grade-I prostatomegaly, chronic cystitis and bilateral hydro-ureteronephrosis secondary to bladder outlet obstruction. USG- color Doppler of scrotum revealed altered echo patterns of bilateral testis suspecting neoplastic etiology. Gross findings in bilateral testis on cut surface showed non-delineable testicular morphology with cheesy grey white necrotic material. On microscopy, sections studied from bilateral testis enhanced numerous

varying sized caseating epithelioid granulomas (Figures 1 and 2) with complete effacement of normal architecture. Granulomas were also identified in vas deferens (Figure 4) and epididymis. No atypical cells were identified in the sections studied. Special stain for AFB revealed strong positivity (Figure 3). Histopathological diagnosis was then confirmed as bilateral granulomatous orchitis with strong AFB positivity.



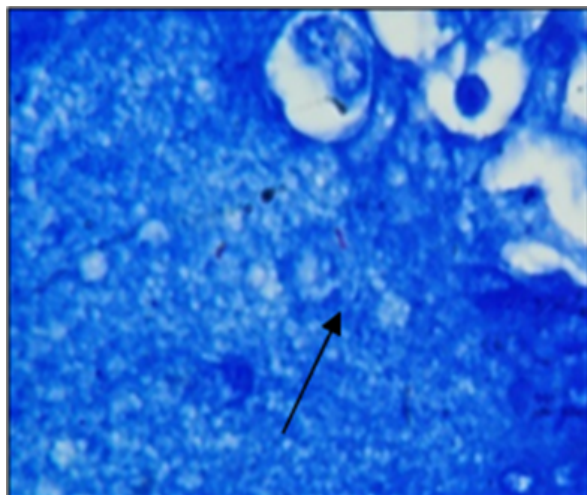
**Fig. 1:** Multiple caseating granulomas have replaced much of the normal testicular tissue.(H&E)



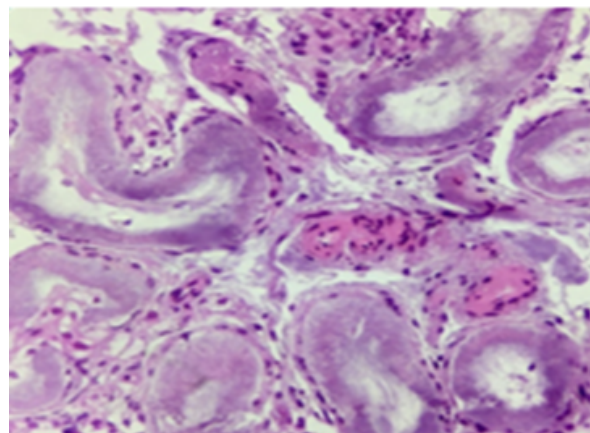
**Fig. 2:** Caseating granuloma with necrosis (H &E)

### 3.2. Case 2

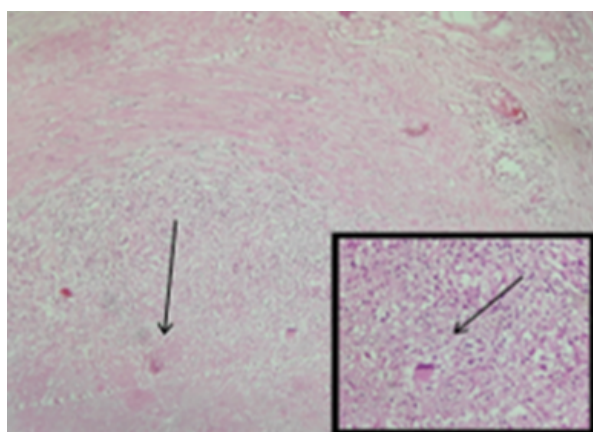
A 53 year male, developed left testicular swelling two months ago, which gradually increased in size and is now associated with pain since 15 days with increasing pain intensity over a period of time. CT scan findings revealed left testicular mass with mild heterogeneity and left sided hydrocoele along with pre and para-aortic lymphadenopathy, suspecting testicular tumor. On gross examination, noted multiple irregular grey-white cheesy



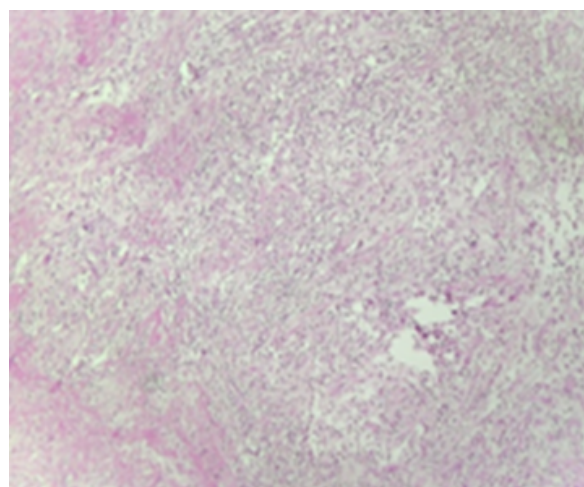
**Fig. 3:** ZN stain positive for AFB showing bacilli.



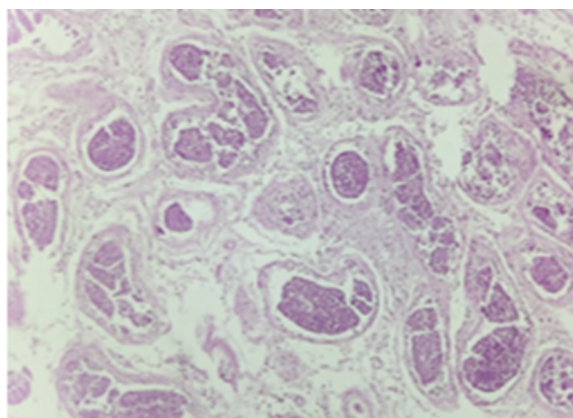
**Fig. 6:** Cryptorchid testis-Seminiferous tubules exhibiting thickening of basement membrane and few tubules showing hyalinization (H&E).



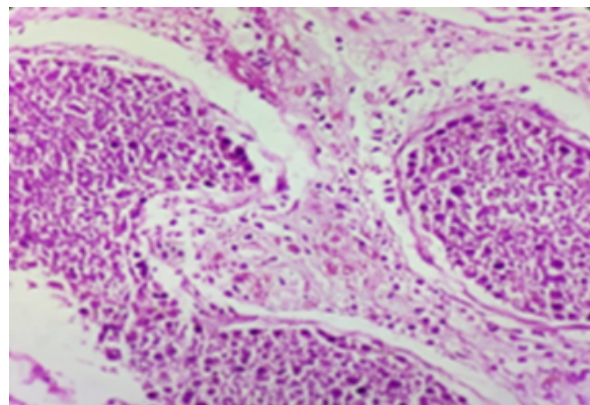
**Fig. 4:** Vas deferens showing granulomas (H&E).



**Fig. 7:** Dense para-testicular inflammation secondary to testicular torsion (H & E).



**Fig. 5:** Acute epididymitis and mild orchitis (H&E) seen in case of surgical castration.



**Fig. 8:** Coagulative necrosis with dense inflammatory cell infiltrate, confirming diagnosis of testicular torsion with orchitis (H&E).

necrotic nodules. Microscopic findings showed loss of normal architecture with multiple caseating granulomas. No atypical cells were identified in the sections studied. Sections stained for Acid Fast Bacilli were negative. Final histopathological diagnosis was confirmed as unilateral granulomatous epididymo-orchitis negative for AFB.

### 3.3. Case 3

A 37 year old male, had complained of acute onset swelling of left testis associated with pain, fever and tenderness since eight days. Swelling gradually increased in size. Ultrasonography of the left scrotum revealed Epididymo-orchitis with testicular torsion. On gross examination, cut surface of epididymis appeared mildly congested with dark-brown areas with identifiable testicular morphology. Microscopy of the sections studied from testis showed dense mixed inflammatory cell infiltrate predominantly consisting of neutrophils admixed with focal areas of hemorrhage and karyorrhectic debris. Sections studied from paratesticular tissue showed dense sheets of mixed inflammatory cell infiltrate with patchy foci of coagulative necrosis. Histopathological diagnosis was acute epididymitis and mild orchitis and dense paratesticular necro-inflammation, secondary to testicular torsion (Figure 7).

### 3.4. Case 4

A 33 year old male patient presented with complaints of pain and swelling in Right testis. Clinically, it was suspected as testicular torsion and the patient was accordingly posted for emergency orchidectomy. On gross examination, cut surface of the testis showed grey brown- grey black area. Microscopic examination revealed areas of coagulative necrosis with dense inflammatory cell infiltrate admixed with congested and dilated blood vessels (Figure 8). Final histopathological diagnosis was testicular torsion with evidence of orchitis.

### 3.5. Case 5

A 50 year male, presented with swelling and pain in left groin since 7 days, clinically diagnosed as left inguinal hernia with undescended testis in inguinal canal. On gross examination, cut surface showed normal looking testicular parenchyma. On histopathological examination, noted cryptorchid testis features (Figure 6), that is, immature seminiferous tubules exhibiting thickening of basement membrane and few of the tubules showing complete hyalinization. Intervening interstitial tissue shows prominent leydig cell hyperplasia, along with foci of atypia with mild inflammatory cell infiltrate (to rule out intratubular germ cell neoplasm). So, histopathologically, the feature of cryptorchid testis was confirmed.

### 3.6. Case 6

A 65 year old male patient was operated (open suprapubic prostatectomy was performed) 2 month ago for a known case of prostate adenocarcinoma (Gleason's score 3+3=6) (histopathologically confirmed), with serum prostate specific antigen level of 30.39ng/ml. Now has undergone surgical castration (bilateral prophylactic orchidectomy). Cut surface of both the testis and epididymis showed normal looking parenchyma. On histopathological examination, it revealed normal bilateral testicular histology with mild non-specific orchitis (Figure 5).

## 4. Discussion

In this study, six orchidectomy specimens were received from November 2020- October 2021. Age group ranged between 33 to 65 years, with the average affected age being around 50 years.

Amongst six cases, two cases were histopathologically confirmed as granulomatous epididymo-orchitis, out of which, one patient showed bilateral presentation with strong AFB positivity and other patient showed unilateral presentation with negative for AFB. Microscopy revealed testicular tissue with distorted architecture due to the presence of numerous tuberculous granulomas that has replaced most of the normal tissue.<sup>7</sup> Granulomatous orchitis is a rare benign entity that may be difficult to differentiate clinically and radiologically from testicular tumors.<sup>10</sup> AFB positivity detected only in 2.1% of cases with bilateral presentation being rarest. Tuberculosis is a global epidemic with more than 2 billion of the world population infected.<sup>7</sup> Over the last decade, TB has become more common over the world. Genitourinary tuberculosis accounts for 2% to 4% of tuberculosis cases, or around 15% of tuberculous extrapulmonary symptoms. The epididymis is the most prevalent site of genital organ involvement, followed by the prostate; nevertheless, isolated epididymo orchitis might make diagnosing a probable testicular tumor challenging. The incidence of granulomatous orchitis is low.<sup>11</sup> Tuberculous epididymo-orchitis (TEO) is one of the most common genitourinary TB manifestations.<sup>12</sup> Isolated instances of tuberculous epididymo-orchitis with bilateral involvement and AFB positivity is a rare manifestation.<sup>7</sup> Tuberculous orchitis should be considered in the differential diagnosis of testicular swellings in regions where tuberculosis is common.<sup>12</sup> Orchidectomy can decrease discomfort, edema, and other symptoms in the patient while also preventing disease in the remaining testis.<sup>11</sup> Causes for non tubercular granulomatous epididymo-orchitis includes sarcoidosis, leprosy and actinomycosis and other non-specific causes includes N. Gonorrhoea and Chlamydia trachomatis.<sup>10</sup>

Epididymitis can occur secondary to testicular torsion along with mild orchitis, as we have reported in one of our

cases. Torsion normally occurs without any precipitating event, with trauma accounting for about 4-8 percent of cases. An increase in testicular volume (often associated with puberty), testicular tumor, horizontally lying testicles, a history of cryptorchidism, and a spermatic cord with a lengthy intrascrotal segment are all characteristics that predispose people to testicular torsion.<sup>13</sup> In the emergency treatment of torsion testis, time is the most important issue. Torsion of the testis is a surgical emergency that results in orchidectomy in people aged 10 to 25.<sup>2</sup> The success rate of surgery is around 90%-100 percent within 4-8 hours after the beginning of symptoms, but it drops to 50% after 12 hours and only 10% after a day. Delay can be dangerous, and it can also affect fertility.<sup>1</sup> Initially, torsion obstructs venous return. As a result of the subsequent equalization of venous and arterial pressures, arterial flow is compromised, leading in testicular ischemia.<sup>13</sup> Microscopy revealed dense mixed inflammatory cell infiltrate with areas of coagulative necrosis, karyorrhectic debris and haemorrhage.

One orchidectomy specimen received in this study showed features of cryptorchid testis. Cryptorchid testis is a rare adult condition (affecting only 0.5-1 percent of the population) that can lead to infertility. The need of a scrotal examination for every patient presenting with a suspected inguinal hernia is evidenced by epididymo-orchitis masquerading as an irreducible inguinal hernia. Because of the increased risk of testicular germ cell tumors, an orchidectomy for cryptorchidism was performed.<sup>8</sup> In this study, we also noted late presentation (5th decade) of cryptorchidism which is rare(0.5-1%). On gross examination, the testis is smaller and atrophic compared to descended testis. Microscopy revealed immature seminiferous tubules exhibiting basement membrane thickening and some showing hyalinization with occasional foci of atypical germ cells, which are forerunner of malignancy. Because of the increased risk of testicular germ cell cancers in patients with cryptorchid testis, orchidopexy should be performed.<sup>8</sup>

Androgen Deprivation Therapy (ADT) is the gold standard for advanced prostate cancer, and it can be done surgically or medically. Bilateral orchidectomy is performed in surgical castration.<sup>14</sup> In our study, we received the specimen of prophylactic bilateral orchidectomy from a operated known case of prostate adenocarcinoma. Microscopy revealed normal testicular histology with mild non-specific orchitis. Acute epididymo-orchitis (AEO) is an inflammatory condition that affects the epididymis and the ipsilateral testis.<sup>15</sup> It is the leading cause of painful scrotal inflammation.<sup>16</sup> . It usually manifests unilaterally and is caused by a urinary tract infection (urethritis, prostatitis, or cystitis) that spreads to the epididymis and testis via the lymphatic vessels or ductus deferens. It can also be the result of viral infections, trauma, bladder outlet obstruction, autoimmune disorders, or even amiodarone use.<sup>15</sup> Primary orchitis without associated epididymitis is rare but may be

caused by the human immunodeficiency virus.<sup>6</sup>

## 5. Conclusion

Two cases were clinically suspected as neoplastic lesions, and were confirmed as granulomatous orchitis on histopathological examination with one case showing strong AFB positivity.

In this study, we noted late presentation (5th decade) of cryptorchidism with some atypical germ cells, which are forerunner of malignancy.

Knowledge of the histopathological spectrum of epididymo-orchitis is of prime importance to detect the underlying specific etiology for targeted therapy and prevent undue orchidectomy.

## 6. Conflict of Interest

None.

## 7. Source of Funding

None.

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