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## XANTHOGRANULOMATOUS EPIDIDYMO-ORCHITIS AS A UNCOMMON AND RARE PSEUDONEOPLASTIC CONDITION

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**Abstract:** Xanthogranulomatous epididymo-orchitis is a rare pseudoneoplastic condition. We report a case of 24 year old young male patient presented with right scrotal swelling for about 3 weeks duration associated with fever, rigor and pyogenic discharge from the scrotum. The patient complained of pyogenic discharge from the right side of the scrotum on the last 10 days and this was the reason he stopped by and visited our urology unit. He was a physical worker abroad, not married, neither smoker nor alcohol drinker. There was no positive history of trauma, diabetes or obstructive uropathy. On physical examination, pyogenic discharge from the hyperemic and edematous right hemiscrotum was detected. The left testicle was normal but the right testicle and epididymis showed tenderness with severe right scrotal pain. Laboratory results: white blood cell count  $15,8 \times 10^9/l$ ; red blood cell count  $3,9 \times 10^9/l$ ; hemoglobin level 13.9 g/dl; platelet count  $392 \times 10^9/l$ ; C-reactive protein 39 mg/l. Urine culture was positive for E. Coli (105 CFU/ml). Microbial culture of the pus was positive for E. Coli. He had prior history of positive urine culture with E. Coli 12 months ago which was complicated with right epididymo-orchitis and he was treated conservatively on antibiotic. A right scrotal swelling gradually progressive in size for the last 6 months. Testicular tumor markers and ultrasonography (US) of scrotum were ordered. Tumor markers alfa-fetoprotein and beta-human chorionic gonadotropin were within the normal range. Mindray DC-N3 ultrasound (US) system with a 10 MHz high linear transducer was used for scrotal Color Doppler US examination. Color Doppler US scrotum showed right heterogeneous hypo-echoic avascular mass. Patient was counseled about the possibility of testicular tumor or inflammatory reaction involving the right testicle and inguinal orchiectomy was advised. The patient received antibiotic therapy with ciprofloxacin 1 g/day for 5 days. After informed consent and after preoperative treatment, the patient underwent inguinal scrotal exploration with right radical orchiectomy. Exploration of the scrotum revealed important destruction of the tissue architecture. The extirpated volume of the testicle was measuring about 35 mm x 30 mm x 28 mm. The postoperative recovery was uneventful, and the patient was well when last seen 10 months after the operation. Histopathologic findings revealed numerous histiocytic cells with abundant foamy cytoplasm (xanthoma cells) intermingled with neutrophils, lymphocytes and plasma cells around the dilated seminiferous tubules and interstitium. Areas of neutrophilic abscesses were also seen. There was no evidence of malignancy, in any of the sections. The final result determined xanthogranulomatous epididymo-orchitis.

**Keywords:** Xanthogranulomatous epididymo-orchitis, pseudoneoplastic condition

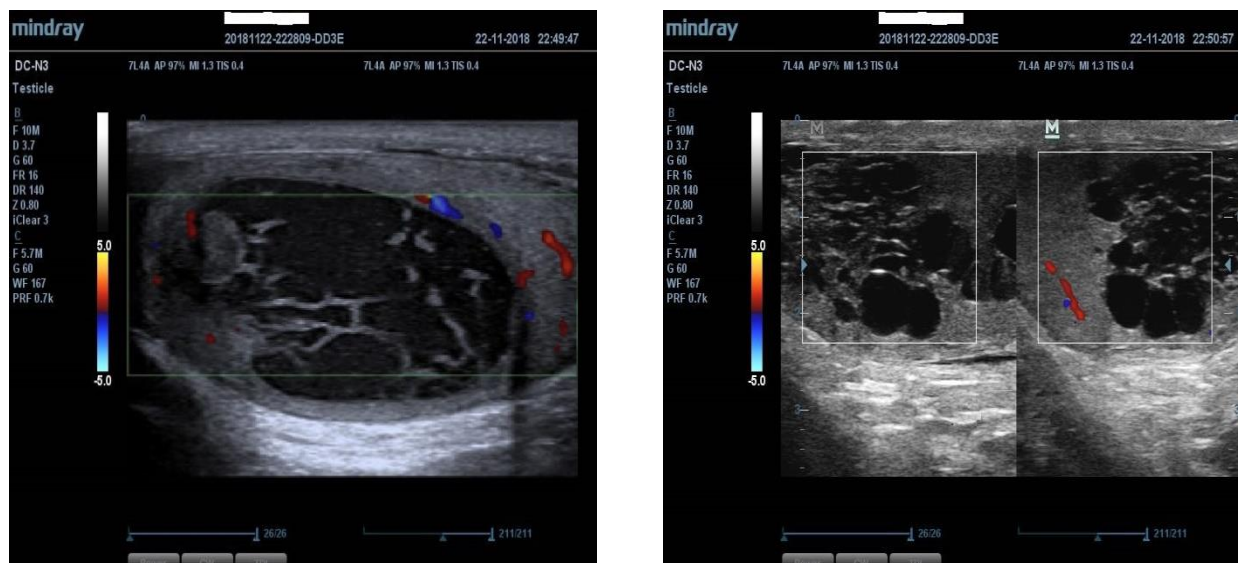
### 1. INTRODUCTION

Xanthogranulomatous orchiepididymitis is an extremely rare inflammatory non-neoplastic destructive lesion of the testis (Al-Said, S. et al. 2007). Granulomatous orchitis is a rare disease, first described by Grunberg in 1926 (Grunberg, 1926). Xanthogranulomatous reaction is uncommon non neoplastic reaction involving multiple organs, commonly kidney and gallbladder. Its rarely involve testicle (Alazab, S. R. et al. 2017). The exact pathogenesis of xanthogranulomatous inflammation remains to be controversial. Advocate explanations suggest persistent chronic inflammatory process in the presence of partial or complete obstruction. This process is influenced by immunological defect of the macrophage (Bates A. W., 1998), persistent chronic infection, and foreign materials such as stone or retained suture material (Yener, N., 2011), local response to tumor, abnormal lipid metabolism and lipid accumulation in the macrophages (Garcia, A. A., 1996). Xanthogranulomatous reaction is rare begin disease affects many different organs, in clinical practice it is well known to affect kidney and gallbladder, but also affect male genital organs including testis, epididymis, and spermatic cord (Said, Sh. H. et al., 2019). Xanthogranulomatous orchiepididymitis is a rare lesion characterized by the destruction of testicular parenchyma and its replacement by

cellular infiltrate consisting predominantly of foamy histiocytes (Parihar, A. & Sharma, S., 2016). Xanthogranulomatous epididymo-orchitis is an extremely rare inflammatory disease of the testis. The process can not be distinguished clinically from a malignant testicular tumor except on histological examination (Cakir, E., et al. 2011). In the genitourinary system, xanthogranulomatous inflammation is more frequently seen in kidney (xanthogranulomatous pyelonephritis) and bladder; however, male genital organs, including the prostate, infrequently develop an inflammation formed by xanthomatous histiocytes. Xanthogranulomatous orchiepididymitis is a very rare disease (Nistal, M., 2004).

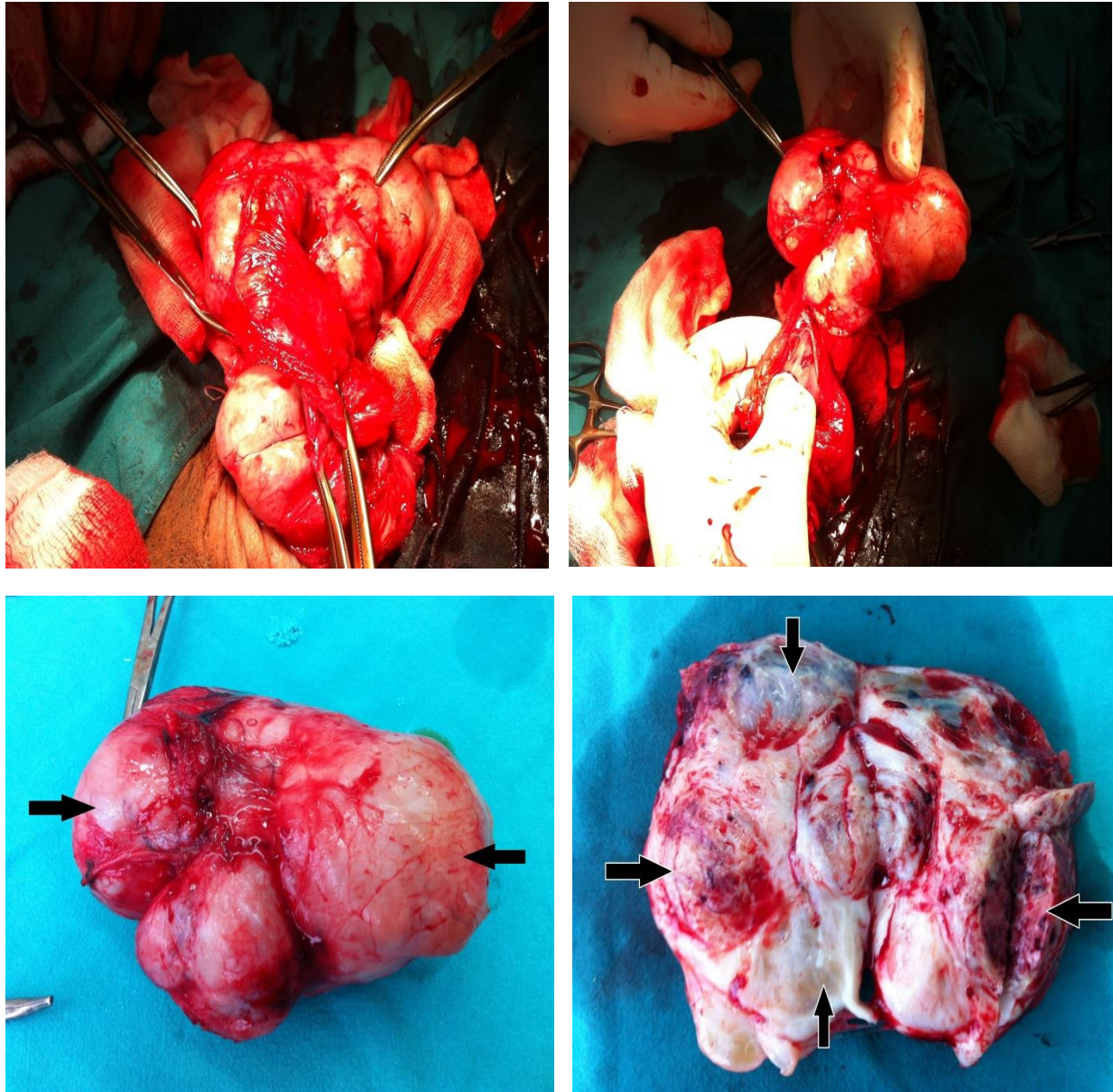
## 2. CASE REPORT

A 24 year old young male patient presented with left scrotal swelling for about 3 weeks duration associated with fever, rigor and pyogenic discharge from the scrotum. The patient complained of pyogenic discharge from the right side of the scrotum on the last 10 days and this was the reason he stopped by and visited our urology unit. He was a physical worker abroad, not married, neither smoker nor alcohol drinker. There was no positive history of trauma, diabetes or obstructive uropathy. On physical examination, pyogenic discharge from the hyperemic and edematous right hemiscrotum was detected. The left testicle was normal but the right testicle and epididymis showed tenderness with severe right scrotal pain. Laboratory results: white blood cell count  $15,8 \times 10^9/l$ ; red blood cell count  $3.9 \times 10^9/l$ ; hemoglobin level 13.9 g/dl; platelet count  $392 \times 10^9/l$ ; C-reactive protein 39 mg/l. Urine analysis showed erythrocyturia with no pyuria but with abundant bacteria. Urine culture was positive for E. Coli ( $10^5$  CFU/ml). Microbial culture of the pus was positive for E. Coli. He had prior history of positive urine culture with E.Coli 12 months ago which was complicated with right epididymo-orchitis and he was treated conservatively on antibiotic. A right scrotal swelling gradually progressive in size for the last 6 months. Testicular tumor markers and ultrasonography (US) of scrotum were ordered. Tumor markers alfa-fetoprotein and beta-human chorionic gonadotropin were within the normal range. Mindray DC-N3 ultrasound (US) system with a 10 MHz high linear transducer was used for scrotal Color Doppler US examination. Color Doppler US scrotum showed right heterogeneous hypo-echoic avascular mass (Figure 1).



**Figure 1: A heterogeneous hypo-echoic avascular mass of the right testicle with areas of liquefactive necrosis on Color Doppler US**

Patient was counseled about the possibility of testicular tumor or inflammatory reaction involving the right testicle and inguinal orchiectomy was advised. The patient received antibiotic therapy with ciprofloxacin 1 g/day for 5 days. After informed consent and after preoperative treatment, the patient underwent inguinal scrotal exploration with right radical orchiectomy. Exploration of the scrotum revealed important destruction of the tissue architecture. The extirpated volume of the testicle was measuring about 35 mm x 30 mm x 28 mm. The postoperative recovery was uneventful, and the patient was well when last seen 10 months after the operation (Figure 2).



**Figure 2: Radical orchiectomy and macroscopic view of the right testicle wich shows necrosis and pus areas**

Histopathologic findings revealed numerous histiocytic cells with abundant foamy cytoplasm (xanthoma cells) intermingled with neutrophils, lymphocytes and plasma cells around the dilated seminiferous tubules and interstitium. Areas of neutrophilic abscesses were also seen. There was no evidence of malignancy, in any of the sections. The final result determined xanthogranulomatous epididymo-orchitis. (Figure 3).



Figure 3: Histopathologic result shows hystiocytic cells with foamy cytoplasm

### 3. DISCUSSION

Xanthogranulomatous orchitis. is an extremely rare inflammatory change of testis which is difficult to distinguish from testicular tumor ( Demirici, D et al., 2004). Xantogranulomatous epididymo-orchitis can occur in young adults and elderly. Presentation is unilateral in most cases. However bilateral cases have been reported. The right testis is commonly more affected than the left for unknown reasons (Cakir, E., et al. 2011). Xanthogranulomatous reaction is rare begin disease affects many different organs, like: gall bladder, appendix, in urology xanthogranulomatous inflammation is more frequently seen in kidney, genital organ involvement includes (epididymis, testis, spermatic cord, and prostate), in reported cases testis then epididymis are most commonly affected and involved by this pathology, solo involvement of spermatic cord not reported yet, process characterized by destruction of normal tissue which is replaced by lipid-laden macrophages, The etiology may includes (immunological defect, abnormal phagocytic activity on necrotic tissues, and chronic infectious conditions), despite correlated etiology pathogenesis of Xanthogranulomatous orchitis (XGO), Xanthogranulomatous epididymo-orchitis (XGEO) still not well established, chronic infection, and epididymal obstruction regarded to play a major role in pathogenesis of XGO, XGEO (Said, Sh, H. et al, 2019). The frequent association of diabetes mellitus with xanthogranulomatous inflammation brings forth a third possible mechanism not previously explored. Diabetes mellitus has been found in as many as 5 of the 14 reported cases of XGO, including the present one. Diabetic patients are frequently immunocompromised, and all steps of leukocyte activity, including adherence, chemotaxis, phagocytosis and bactericidal activity are impaired (Mannan, A. A. S. R. et al., 2009). Orchitis are classified as granulomatous and non-granulomatous orchitis. Several agents are responsible for inflammatory and infective diseases of the testis, causing orchitis. The most common clinical features are scrotal swelling, mass and/or pain. The diagnosis is mainly histological because clinical and sonographic aspects may be not conclusive. Bacterial orchitis are characterized by diffuse enlargement and hyperemia usually without discrete mass (Gianna, P. et al. 2017). There are many lesions that can simulate a neoplasm in the testis or paratesticular structures. Their incidence among tumors arising within the scrotal sac varies according to different series from 6 to 30%. These pseudoneoplastic lesions can be divided into those that only macroscopically imitate neoplasia and those that microscopically imitate neoplasia, regardless of whether they form a macroscopic mass. The latter group causes more problems to the practicing pathologist in terms of the correct classification of a giving lesion (Algaba, F. et al. 2007). However, trauma could cause xanthogranulomatous inflammation. As there is a focal type of XGO, it is therefore difficult to clearly differentiate it from epidermoid cyst. Hence, if epidermoid cyst is suspected, noting the possibility of a focal type of XGO and performing testis-sparing surgery should be taken into consideration (Yamashita, Sh., et al. 2017). The pathogenesis of xanthogranulomatous epididymo-orchitis is not well established, but an obstruction of the epididymis and/or an ischemic process of the testis and genital tract associated with the chronic infective inflammation may be considered the cause of this inflammation. Differential clinical diagnoses of xanthogranulomatous epididymo-orchitis include

the common bacterial epididymo-orchitis, which could be improved by antibiotics and testicular neoplasms which usually have positive markers. Malakoplakia differs from xanthogranulomatous inflammation by the presence of typical Michaelis–Gutmann bodies associated with granular, eosinophilic and vacuolated macrophages. Differential diagnosis may also include specific orchitis or epididymitis. Epithelioid granulomas or multinucleated giant cells and caseous necrosis are absent in xanthogranulomatous epididymo-orchitis (Al-Said, S. et al. 2007). To our knowledge there are 28 cases reported in literature to date. Xanthogranulomatous orchitis is a rare subset of testicular abscess, which itself is a rare complication of epididymo-orchitis. So better research is needed to unravel the mystery of this diagnostic conundrum; as of yet high orchidectomy with good anti-microbial coverage remains the best and safest modality for satisfactory patient management (Balaji, D. et al. 2016). Due to the destructive effects of xanthogranulomatous orchitis, treatment should be aggressive, with radical orchiectomy, which could be partial in some cases. Antibiotic therapy for anaerobic bacteria is also important (Gongora E Silva R. F., et al. 2019). xanthogranulomatous orchitis is a rare pseudoneoplastic condition and is seldom diagnosed preoperatively as physical and radiologic findings are indistinguishable from those of testicular tumors (Somani, K. 2019).

#### 4. CONCLUSION

The present case serves as a reminder that XGO is a rare pseudoneoplastic condition and is seldom diagnosed preoperatively as physical and radiologic findings are indistinguishable from those of testicular tumors. XGO is a rare disease. Few cases are reported in the literature. There is no definite radiological or laboratory method to diagnose this disease and it may present as testicular tumors. Curative treatment is radical orchiectomy because of the aggressive nature of this disease. Further studies should be done to figure out the exact etiology of this disorder.

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