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·*Case Report*·

A rare diagnosis: testicular dysgenesis with carcinoma *in situ* detected in a patient with ultrasonic microlithiasis

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Abstract

A rare case is presented where a dysgenetic testis with microinvasive carcinoma *in situ* (CIS, also known as intratubular germ cell neoplasm of unclassified type [IGCNU] and testicular intraepithelial neoplasia [TIN]) with microinvasion to rete testis and the interstitial tissue was found in a 32-year-old man presenting with mild scrotal pain and ultrasonic testicular microlithiasis. Knowledge of the association of ultrasound and CIS is important to diagnose patients at the stage prior to development of an overt germ cell tumor. The patient had three of four disorders considered symptoms of the testicular dysgenesis syndrome (TDS): a dysgenetic left testicle with CIS, a mild left-sided cryptorchidism (high positioned scrotal hypotrophic testis) and a slightly reduced semen quality. Therefore, it should be kept in mind that a patient with one TDS symptom may harbour the other, even CIS or testicular cancer. Accordingly, patients with one TDS symptom ought to be examined for the presence of the others, and if more that one is present, extra concern is warranted. *(Asian J Androl 2005 Dec; 7: 445–447)*

Keywords: testicular cancer; carcinoma *in situ*; testis; microlithiasis; testicular dysgenesis syndrome

1 Case report

A 32-year-old, non-smoking, non-drinking musician presented for evaluation of mild left-sided scrotal pain, which had been present for over one year. The patient's history revealed that he had suffered from a genital infection with chlamydia four years earlier, but no other scrotal disease or scrotal injury. The patient reported that he felt as if the size of the left testicle was decreasing. He had intentionally had no children. Clinical evaluation revealed the right testicle of normal size and consistency; however, the left was somewhat hypotrophic and was placed high in the scrotum. Ultrasound examination showed the right testicle of volume 22.7 mL with normal echoscore and the left testicle of volume 8.9 mL with ultrasonic testicular microlithiasis (TM) (Figure 1) [1].

Because of the increased risk of carcinoma *in situ* (CIS, also known as intratubular germ cell neoplasm of unclassified type [IGCNU] and testicular intraepithelial neoplasia [TIN]) in testes with TM [2], bilateral open testicular biopsies were taken. The right-sided biopsy revealed normal testicular tissue with spermatogenesis in all stages, and the left-sided biopsy mainly revealed tubules containing CIS. The patient was advised to undergo unilateral orchidectomy, prior to which semen was cryopreserved. Semen quality was in the normal to sub-

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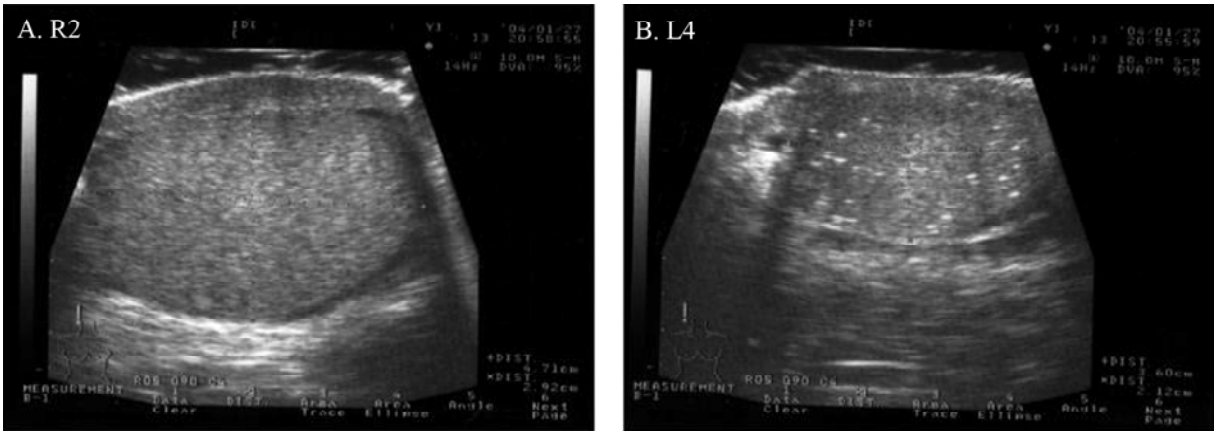

Figure 1. Testicular ultrasound examination. (A): Ultrasonograph of the right testicle showed a volume of 22.7 mL and echoscore 2 (normal). (B): Ultrasonograph of the left testicle showed a volume of 8.9 mL and testicular microlithiasis, echoscore 4. R2: right testicles echoscore 2; L4: left testicle, echoscore 4.

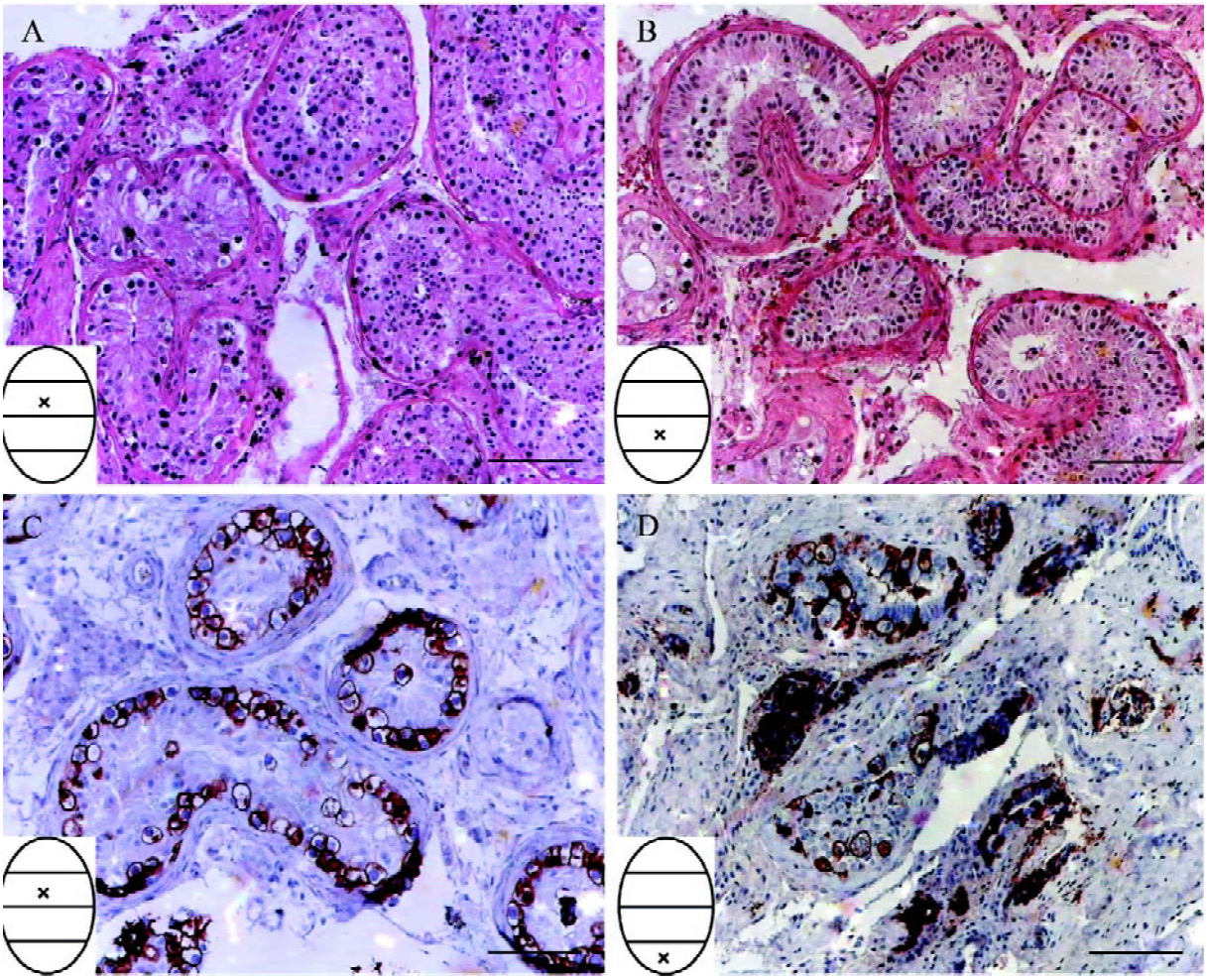

Figure 2. Histological features of the excised, step-sectioned left testis. (A): CIS tubules on the left, tubules containing normal testicular tissue on the right, HE staining. (B): An area of dysgenetic tubules containing immature Sertoli cells arranged in a distorted pattern, HE staining. (C): CIS testis with placental alkaline phosphatase (PLAP) staining. (D): Invasion of the rete testis and interstitium with PLAP-stained cells. Scale bar = 100 μm.

normal range (12–40×10^6 sperm/mL), normal volume and motility. Blood samples including reproductive hormones were in the normal range. The excised testis was step-sectioned (Figure 2). CIS was present in approximately 90 % of tubules and microinvasion was present in the rete testis and the interstitium; furthermore, dysgenetic features, such as immature and hyalinized tubules, were observed. The invasive cells had decreased morphological resemblance to CIS cells and were possibly differentiating into a non-seminoma. The clinical course and follow up were uneventful.

2 Discussion

This case study underlines the importance of performing ultrasonography in patients with scrotal pain in hypotrophic testes. There may be numerous causes of scrotal pain and in most cases these are benign. However, malignancy can occur and should not be missed despite that it occurs at an early stage of the neoplastic development. To our knowledge, only one similar case of CIS detected in a patient with scrotal pain has been previously reported [3]; diagnosis in most cases takes place only when there is an overt tumor. TM is strongly correlated with pathologic conditions of the testis [2] and may be caused by irregularities of the testicular tissue, such as hyalinized tubules, microliths or CIS [4]. The present case emphasizes that TM may herald malignancy. Testicular CIS is the precursor of germ cell tumors, which are the most common malignancies among young men [5]. By diagnosis of testicular cancer at the preinvasive stage of CIS, the opportunity of intervening exists before an invasive tumor is evident, thus reducing the necessity of intensive therapy.

The patient in the present case study had three of four disorders considered symptoms of the Testicular Dysgenesis Syndrome (TDS) [6]: 1) a dysgenetic left testicle with CIS; 2) a mild, left-sided cryptorchidism; and 3) a slightly reduced semen quality. The reduced semen quality may be due to an underlying common cause, or may be due to the fact that the patient had cryptorchidism [7, 8]. TDS most often presents with impaired spermatogenesis and only in rare cases can the full range of its signs be seen in one patient [9]. The TDS hypothesis postulates that genetic abnormalities or adverse environmental influences may cause disruption of gonadal development during fetal life. Symptoms may be manifested at birth as genital malformations or later in young adulthood as subfertility, undescended testes or a testicular neoplasm. Therefore, it should be kept in mind that a patient with one TDS symptom may harbour the other, even CIS or testicular cancer.

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