



Andrology and fertility

Tubular ectasia of the rete testis: A benign yet unrecognized condition

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ABSTRACT

Tubular ectasia of the rete testis (TERT) presents as multiple cystic structures within the rete testis, often incidentally detected on ultrasound as echo-free intratesticular cystic lesions. Despite its benign nature, assessing testicular cystic lesions can sometimes be challenging. The primary importance of identifying this uncommon condition lies in its distinction from cystic testicular malignancies and thus avoiding further radical procedures. We report an instance of TERT within the right testis discovered incidentally in a patient with a medical background of epididymitis, presenting for management of left testis cryptorchidism, and bilateral inguinal hernia.

1. Introduction

Scrotal Ultrasound is pivotal in diagnosing nonmalignant processes within the scrotum. Among the infrequently documented benign conditions in medical literature is Tubular Ectasia of Rete Testis (TERT).¹ It refers to the dilation of the seminiferous canaliculi within the rete testis displaying on ultrasound as an intratesticular region with anechoic round lesions.² While ultrasound is reliable, differentiation from malignancies sometimes warrants magnetic resonance imaging (MRI) for further clarification.³

An accurate diagnosis is crucial, particularly among young adults commonly diagnosed with testicular cancer, as it guides appropriate management avoiding unnecessary surgical interventions like inguinal exploration or orchidectomy.²

This article provides an overview of the pathogenesis, the clinical and sonographic features, and management strategies, illustrated by a case involving a 50-year-old male with a medical background of epididymitis, contralateral cryptorchidism and bilateral inguinal hernia.

2. Case report

We present a case of a 50-year-old patient with a medical history of right testis epididymitis dating back to two years, treated with fluoroquinolone-based antibiotics and a notion of carrying heavy loads as part of his profession. He was admitted for surgical management of

uncomplicated bilateral inguinal hernia evolving over 8 months. The condition initially manifested as local pain with a progressive onset of bilateral inguinal swelling, and a sensation of heaviness in the right hemiscrotum, without associated digestive symptoms. Physical examination revealed two reducible inguinal masses with no signs of complications, an empty left hemiscrotum, and a normally positioned non tender right testicle with regular consistency.

Scrotal ultrasound revealed multiple anechoic rounded formations within the testicular parenchyma, the largest of which, measuring 12 × 6 mm, with no flow on color doppler (Fig. 1).

Serum tumor markers were within normal range and no androgen deficiency was found on blood tests. The diagnosis of TERT was supported by pelvic MRI findings revealing cystic liquid filled lesions with high signal intensity on T2-weighted imaging within the right testicle, and a hypotrophic, cryptorchid left testicle located in the left iliac region measuring 22 × 24 × 21 mm. No solid component was identified within the lesions (Fig. 2).

While surgical cure of the hernia with left orchidectomy were performed via laparoscopy, a conservative approach was adopted towards the right testis affected by TERT. Subsequent follow up scrotal ultrasounds were unremarkable with no significant changes in the aspect of the cysts.

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3. Discussion

TERT manifests as multiple cysts within the rete testis, attributed to obstruction or compression.⁴ Its benign nature was confirmed through case evaluations. It's an acquired condition whose exact cause remains uncertain but, many potential factors are to discuss.³

Various etiologies, including surgical, traumatic, neoplastic, or infectious factors, can cause mechanical obstruction of the epididymis or spermatic cord. Testicular tumors, hematoceles, and hydroceles, may induce TERT through extrinsic compression. Surgical procedures like hernioplasty or vasectomy, congenital abnormalities like cryptorchidism, and conditions such as spermatocele or chronic epididymitis are associated with TERT.⁴

Ischemic degeneration of efferent ducts, possibly due to reduced perfusion from epididymal artery atherosclerosis, is hypothesized to cause tubular atrophy.³ Androgen deficiency contributes to epididymal duct atrophy. Additionally, systemic factors such as cirrhosis and calcium oxalate crystal accumulation in the tubular lumen among dialysis patients may induce this condition.^{3,4}

TERT predominantly affects men around 62 years, with prevalence rising with age, bilateral involvement is reported in one-third of cases.¹ Frequently asymptomatic, it's often incidentally detected on ultrasound. This silent progression often distinguishes it from testicular tumors. Patients diagnosed with TERT typically fall outside the age range associated with testicular neoplasms and do not present with palpable testicular masses.

Scrotal ultrasound is the preferred imaging modality for assessing scrotal abnormalities. With its widespread use, intratesticular cystic processes are incidentally discovered in up to 10 % of cases.² TERT appears as a cluster of small echo-free cystic formations within the typically echogenic structure extending from the mediastinum testis to the epididymal head. In cases of extrinsic compression by a tumor, differentiation from solid masses is crucial, aided by the absence of flow signals on color Doppler sonography.¹

MRI serves as a valuable diagnostic tool, especially when distinguishing from teratomas. TERT usually appears as multilocular formations with high signal intensity on T2-weighted imaging and no enhancement after contrast agent administration.⁵

Histologically, TERT refers to a non-malignant alteration associated with benign smooth muscle proliferation around the tubules of the rete testis. Although malignant transformation of the rete testis is rare, it has been acknowledged to be possible.⁴

Differentiating TERT from testicular tumors, especially cystic teratomas, is crucial. Testicular tumors often affect younger individuals, presenting as palpable nodules with increased blood flow on ultrasound. Additional tests like serum HCG, α -FP, and LDH may aid diagnosis, with MRI and surgical exploration for confirmation.³⁻⁵

Cystic dysplasia, a congenital condition, shares features with TERT. Simple cysts, cysts of the tunica albuginea and epidermoid cysts are differential diagnoses. Intratesticular varicoceles resemble TERT but

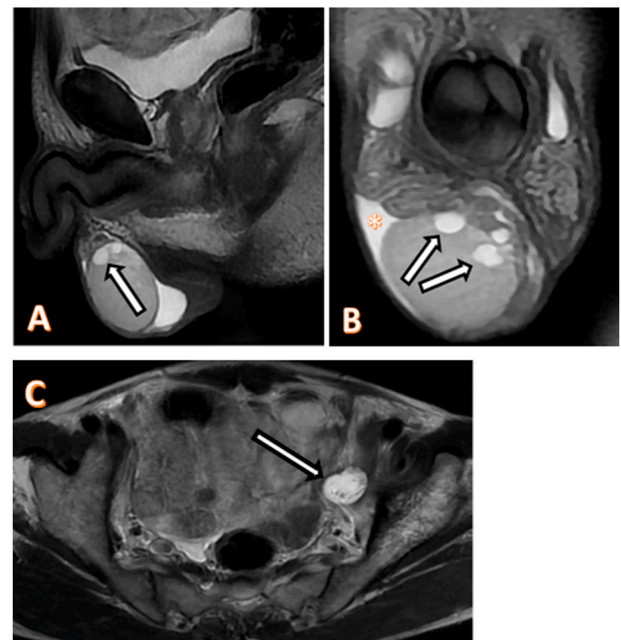


Fig. 2. Testicular MRI in T2-weighted Imaging. A: Sagittal section showing a right intra-scrotal testicle with intra-testicular cysts in t2 hypersignal (Arrow) B: Coronal section revealing an empty left hemiscrotum and a normal-sized, regularly contoured right testicle with intra-testicular cysts extending from the testicular mediastinum (arrows) and a low volume hydrocele (asterisk) C: Axial section in T2WI, showing a hypotrophic testicle located in the left iliac region, with heterogeneous signal and a major axis of 2.4 cm.

show slow vascular flow on Doppler ultrasound.^{3,5}

Following the accurate diagnosis and given the well-established benign nature of TERT, no specific treatment measures, including surgery, are necessary.^{3,5} Besides, no further follow up is necessary.⁴

4. Conclusion

Tubular ectasia of the rete testis, though often identified as an incidental finding in men over 50 y during scrotal ultrasound, it possesses distinctive imaging characteristics despite occasional misinterpretations. The differentiation from malignant conditions is crucial for appropriate treatment measures and the avoidance of further costly procedures.

Consent

Informed consent was obtained from the patient for the publication of all images, clinical data and other data included in the main

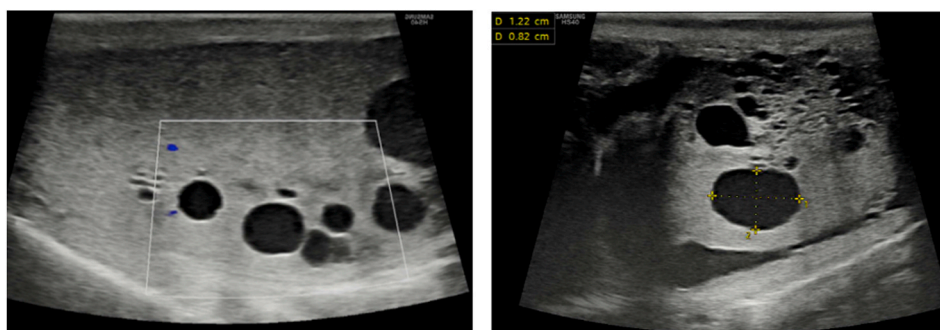


Fig. 1. Clusters of anechoic cystic structures, non-vascularized on color Doppler. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

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CRediT authorship contribution statement

Chadi Bourimi: Conceptualization, Writing – original draft, Writing – review & editing. **Abir El Hamzi:** Data curation. **Youssef Abaair:** Data curation. **Khalid Mzouri:** Data curation. **Imad Boualaoui:** Supervision. **Ahmed Ibrahim:** Supervision, Writing – review & editing. **Hachem El Sayegh:** Supervision, Writing – review & editing. **Yassine Nouini:** Supervision, Validation, Writing – review & editing.

Declaration of competing interest

None.

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None.

Abbreviations:

TERT	Tubular Ectasia of Rete Testis
MRI	magnetic resonance imaging
HCG	human chorionic gonadotropin
α -FP	alpha-fetoprotein
LDH	lactate dehydrogenase

References

1. Pandya VK, Sutariya HC, Patel KM. Tubular ectasia of rete testis – a diagnostic dilemma. *Clinical Queries: Nephrology*. 2016;5:33–34.
2. Burrus JK, Lockhart ME, Kenney PJ, et al. Cystic ectasia of the rete testis: clinical and radiographic features.
3. Mahlknecht A, Mahlknecht P, Fallaha M, et al. Tubular ectasia of the rete testis (TERT). Differential diagnosis of cystic testicular disorders. *Arch Ital Urol Androl*. 2015;87:5.
4. Rogel R, Avargues A, Luján S, et al. Tubular ectasia of the rete testis: what is behind it? *EMJ Urol*. 2016:70–74.
5. Dieckmann K-P, Frey U, Feyerabend B, et al. Tubuläre Ektasie des Rete testis: Die Differenzialdiagnose von zystischen Veränderungen im Hoden. *Urologe*. 2011;50: 57–63.