A Simple Cyst of the Testis was Found Incidentally during Castration for Prostatic Cancer

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ABSTRACT

Simple Cysts (SCs) within the testes are rare in adults. The testicular SC lining comprises mesothelial cells. This report presents a case involving the accidental discovery of a castration-worthy SC in the right testis of a Japanese man in his 90s who was diagnosed with prostatic adenocarcinoma. Microscopic analysis revealed that the cystic wall was covered with flat to cuboidal mesothelial cells. Immunohistochemistry demonstrated mesothelial cell positivity for calretinin, Wilms Tumor 1 (WT-1), Hector Battifora Mesothelial Epitope-1 (HBME-1), and Cyclin-Dependent Kinase Inhibitor p16 (p16INK4a). Notably, no Human Papillomavirus (HPV) *in situ* hybridization was detected. This report outlines an exceptionally rare instance of a simple cyst within the testis, suggesting the possibility of its origin from ectopic rete testis epithelium. This marks the inaugural documentation in the English literature of an SC within the testis found incidentally during castration for prostatic cancer.

KEYWORDS: Simple cyst of the testis, Mesothelium, Ectopic rete testis, Prostatic cancer, Castration, Case report.

INTRODUCTION

Testicular Simple Cysts (TSC) are infrequent benign cystic lesions that contain clear serous fluid within the testicular parenchyma. These cysts exhibit a bimodal distribution, occurring in both adults and infants, with peaks at eight months and 60 years of age [1-2].The lining of the testicular SC typically consists of a flat to cuboid epithelium, specifically mesothelial cells.

The SC has no spermatozoa and ranges from 2-18 mm in diameter. In the present study, we elucidated the pathological features of an SC in the right testis of an elderly Japanese man with prostatic acinar adenocarcinoma of the bilateral lobes.

CASE REPRESENTATION

A Japanese man in his 90s regularly visited our hospital and was referred from another hospital with dysuria and high prostatic specific antigen. Laboratory findings on admission showed elevated prostatic specific antigen (27.4 ng/mL). Magnetic resonance image revealed a broad capsular lesion in the bilateral transition zone (Figure 1a and 1b). The results of the prostatic needle biopsies revealed prostate cancer (PC), prostatic acinar adenocarcinoma, and Grade group 3 of the bilateral lobes (7/7) (Figure 1c and 1d).

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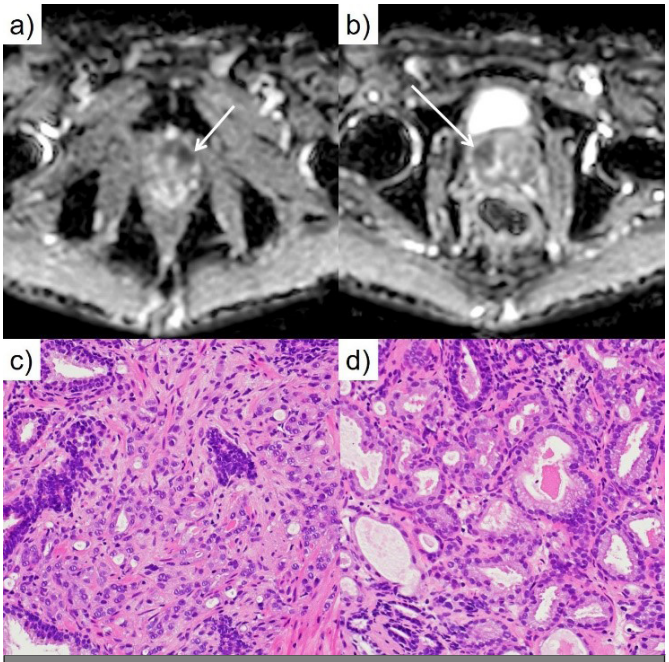

Figure 1. Magnetic resonance imaging reveals a broad capsular lesion in the bilateral transition zone of the prostate. At the apex level, they correspond to a low signal intensity on the apparent diffusion coefficient map. **Note:** white arrows (a) left lobe lesion; (b) right lobe lesion. (c) Gleason pattern. (d) Gleason pattern.

Pathological Findings

Gross morphology: Testes measured 6.5×3.5×2.1 cm in size, 22 g in weight (right) and 4.5×3.0×2.3 cm in length, 16 g in weight (left). Hemisection of the right testis revealed a unilocular cyst within the parenchyma (Figure 2). The cyst measured 16×15 mm in size. The cystic fluid was serous, yellow and transparent. No significant abnormalities were observed in the left testes.

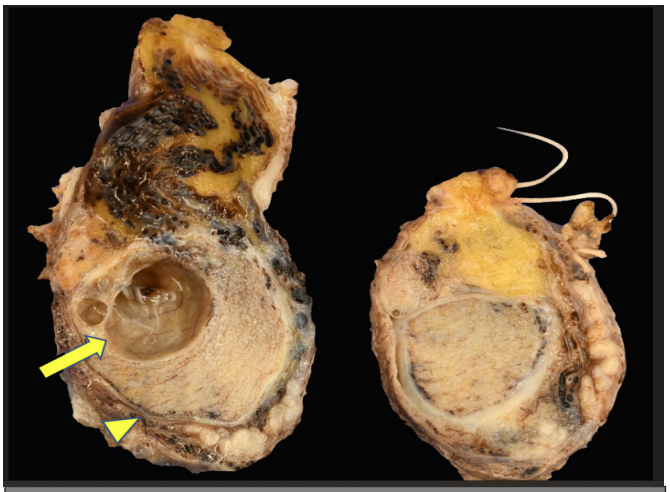

Figure 2. Macroscopic appearance of bilateral testes. Hemisection of the bilateral testes.
Note: A unilocular cyst measuring 16×15 mm is seen within the parenchyma of the right testis (Yellow arrow). The cystic wall is smooth and no mural nodules are observed. The lesion is separated from the tunica albuginea of the right testis (Yellow arrowhead).

Microscopic Findings

Microscopically, the cyst existed entirely within the parenchyma of the testis near the rete testis and was separated from the rete testis, tunica albuginea, and epididymis (Figure 3a). The empty cyst lumen had no spermatozoa, and the lining epithelium had a flat layer on the cuboidal epithelium (Figure 3b). The seminiferous tubules showed atrophy with hyalinization in the surrounding areas. Immunohistochemically, the cystic lining epithelial cells revealed diffuse strong immunoreactivity for Cytokeratin (CK) AE1/AE3 (Figure 3c), Wilms Tumor (WT)-1, calretinin, Hector Battifora Mesothelial Epitope-1 (HBME-1) (Figure 3d), Cyclin-Dependent Kinase Inhibitor p16INK4a (clone: G175-405) (Figure 3e), and weak positivity for thrombomodulin and EMA. Human Papillomavirus (HPV) *in situ* hybridization was negative (Figure 3f), podoplanin (clone: D2-40), p63, mesothelin, CK 5/6, and Ki-67 (clone: MIB-1) labeling index was as high as 1%.

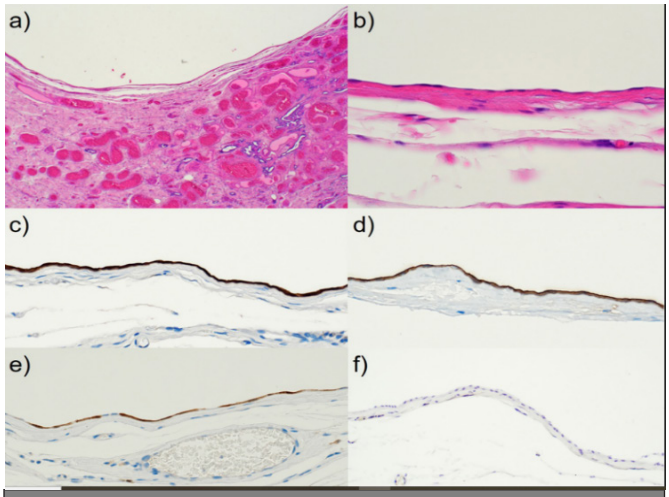

Figure 3. Microscopic findings of an intratesticular simple cyst (a–f).
Note: (a) Very flattened single-layered cells line the inner surface of the cyst and are surrounded by thin hyalinized connective tissue. (b) High-power view of the epithelial cells lining the cyst, showing single flat to cuboidal cells. (c) CK AE1/AE3, (d) HBME-1, (e) p16INK4a, and (f) HPV

Diagnosis

Based on the above histopathologic findings, we made a final pathologic diagnosis of "testicular SC."

RESULTS AND DISCUSSION

Testicular is uncommon; however, its identification has become more frequent due to the widespread use of advanced, high-resolution ultrasound technology for scrotal examinations. These SCs are classified into two clinical categories: infantile and adult types. The adult variant typically presents with no symptoms and remains non-palpable. They are found incidentally on urological examination, castration as a PC or even autopsy treatment [3]. Pathology is the gold standard for diagnos-

ing testicular SCs. Microscopically, the SCs of the testes were defined as follows.

- They must lie within the parenchyma of the testis, contain clear fluid free from sperm, and be surrounded by a wall lined by flat or cuboidal epithelial cells.
- The wall must be separated from the tunica albuginea; neither the wall nor the parenchyma contained teratomatous elements.
- The remaining testes showed no evidence of chronic inflammation or fibrosis.

The present case fulfilled these criteria. The management of SC in the testes remains controversial. Orchiectomy, testicular parenchyma-preserving enucleation of the cyst, and conservative surveillance using ultrasonography are the three options available to patients and doctors. Ultrasound studies have indicated that SC of the testis has little potential for growth. More and more doctors are advocating a "watch and wait" strategy in recent years. This "watch and wait" strategy is an excellent choice for patients with asymptomatic cysts, both infant and adult types. In addition, we recommend orchiectomy if the patient is >50 years of age [4]. Rete testes showed weak focal calretinin staining. The lining epithelium of the SC of the testes is composed of mesothelial cells derived from the ectopic rete testes.

Our patient also showed diffuse immunoreactivity for p16INK4a (Figure 3e); however, HPV was undetectable by immunohistochemistry (Figure 3f). According to the research conducted by the human protein atlas [5]. It has been reported that high levels of p16INK4a expression occur in male genital tissue, particularly in the testis. Therefore, this observation may be a normal finding [6].

Here, we report a rare incidental case of SC of the right testis in an adult castration and confirm by immunohistochemistry that the lesion was derived from an ectopic rete testis [7]. This is the rare report of SC in a testis found incidentally during castration for prostatic cancer in English literature.

CONCLUSION

Our study presents a rare and incidental case of a testicular Simple Cyst (SC) within the right testis of an elderly Japanese man undergoing castration due to prostatic acinar adenocarcinoma. The clinical presentation of SCs can be asymptomatic, and their identification is increasingly common, often as an incidental finding during urological examinations or autopsy. The gold standard for diagnosing testicular SCs involves histopathological evaluation, which includes specific criteria, such as the presence of clear fluid within the parenchyma, the absence of spermatozoa, and a lining of flat or cuboidal epithelial cells separated from the tunica albuginea.

The management of testicular SCs remains a subject of debate, With options ranging from orchiectomy to conservative surveillance. Recent trends have leaned toward a "watch and wait" approach, particularly for asymptomatic cysts, while orchiectomy may be considered for older patients. Our case aligns with these criteria, and we support the "watch and wait" strategy for such cases.

Immune histochemical analysis in our patient revealed an interesting observation of diffuse immunoreactivity for p16INK4a, despite the absence of detectable HPV. This finding may reflect the high expression of p16INK4a in male genital tissue, particularly in the testis, suggesting its normal occurrence.

This report not only adds to the understanding of testicular SCs but also highlights the importance of considering a conservative approach in their management. Additionally, it emphasizes the potential for unique immune histochemical findings that may not necessarily indicate pathology. To our knowledge, this is the first documented case of an incidentally discovered testicular SC during castration for prostatic cancer in the English literature, further underscoring its rarity and the need for ongoing research and clinical awareness in this field.

AUTHOR CONTRIBUTIONS

Each author has taken part sufficiently in the work to take public responsibility for the appropriate portions of the content. Mitsuhiro Tachibana and Hideki Hamayasu performed a histopathological diagnosis of the resected sample, analyzed the data, drafted the figure, and contributed significantly to the manuscript. Hiromichi Nakagawa and Shigeki Fukuzawa were teams of attending doctors who performed surgical treatment and clinical follow-up. Hayato Nozawa made the radiological diagnoses of PC and SC. All authors gave final approval for publication.

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REFERENCES

1. Hatsiopoulou O, Dawson C. Simple intratesticular cysts in adults: A diagnostic dilemma. BJU Int 2001; 88(3):248-250.
2. Nistal M, Paniagua R, Peramato PG. Nonneoplastic diseases of the testis. UROLOGIC SURGICAL PATHOLOGY.2020; 614–755.
3. Kuwamoto S, Okuno K, Kato M, Hayashi K. Simple cysts of testis with immunohistochemical evidence of meso-

thelial origin. Pathol Int 2009; 59(9):656-659.
4. Fang Y, Zhao L, Yan F, Cui X, et al. Strategy for treating simple testicular cyst in adults. Am J Men Health 2011; 5(3):193-197.
5. Ponten F, Jirstrom K, Uhlen M. The Human Protein Atlas--a tool for pathology. J. Pathol 2008; 16(4): 387-393.
6. Lam KY. Bilateral intratesticular cysts—a specific entity. Scand J Urol Nephrol 2010; 30(4): 329-331.
7. Sahin A, Ozen H, Gedikoğlu G, Ozyavuz R, et al. Two simple cysts of the same testis. Br J Urol 1994; 73(1) 107-108.