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Primary Squamous Cell Carcinoma in the Testis: A Case Report

A 51-yr-old man presented with an enlarged right testis for two months. The radically resected testis showed a relatively well-circumscribed ovoid mass, nearly replacing the normal architecture with central cystic changes. Microscopically, the mass was composed of ovoid shaped tumor cells of a moderately differentiated squamous cell carcinoma (SCC). The central portion of the mass was filled with well-formed laminated keratinous materials and the remnant cavity lined by dysplastic squamous epithelium, indicated SCC may be derived from an epidermal cyst. SCC is among the most common types of neoplasm afflicting human beings, but it is rare in the testis. To our knowledge, this is the second report of the testicular squamous cell carcinoma occurring in a patient without other primary tumors, and the firstly reported case in Korea.

Key Words : *Carcinoma, Squamous Cell; Testis*

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INTRODUCTION

More than 90% of testicular cancers are germ cell tumors derived from the epithelium of the mature testis. Squamous cell carcinoma (SCC) of the testis is a rare finding except for metastasis from other sites. Tumors that metastasize to the testis are extremely rare, too. Among them, the lung is the most common primary site (1).

Herein, we document a rare case of primary testicular SCC and briefly discuss the differential diagnoses.

CASE REPORT

A 51-yr-old man presented with right scrotal mass for two months, and visited our hospital for increased pain for a week. The contralateral testis and epididymis were without any mass. He was a nonsmoker and previously healthy. He had a history of hematoma excision for a testicular trauma twenty years before. At that time, excised hematoma had not been pathologically examined. Scrotal ultrasound showed a hyperechoic mass with a hypoechoic rim within the parenchyma in the right testis. The lesion had high central density echoes surrounded by hypoechoic rims. On Doppler, increased flow was found in the mass.

Abdominal computed tomography (CT) showed that about 4.8 cm sized low density lesion and internal enhanced portion with scrotal wall thickening in right scrotum (Fig. 1). Radiologically, testicular tumor such as germ cell tumor or lymphoma with hydrocele was suspected. Enlarged lymph nodes of aortocaval, retrocaval, and retroperitoneal area were also found. Serum alpha fetoprotein (AFP) levels (0.9 ng/mL) and beta-human chorionic gonadotropin (HCG, 0.24 mIU/mL) were within normal limits. Chest CT revealed old-stable tuberculosis at the right upper lung.

Under the impression of primary testicular germ cell tumor with regional lymph node metastasis, right radical orchiectomy was performed. Postoperatively, retrospective evaluation of other organs including head and neck region showed no abnormality. During the one month, he was unfortunately lost to follow up.

Pathologic results

The submitted specimen did not include scrotal skin. Grossly, the cut surface of the resected testis showed that a whitish-gray friable ovoid mass, measuring 5.0×3.0×3.0 cm, nearly replacing the entire testis. It showed central cystic changes and a peripheral hydrocele (Fig. 2). The resected specimen was fixed in 10% formalin, paraffin-embedded and stained with hematoxylin-eosin. Entire sections were taken from the specimen. Microscopically, the mass consisted of nests of ovoid shaped tumor cells having orangeophilic cytoplasm and keratin pearls (Fig. 3A, B). Multiple endolymphatic tumor emboli were seen. Serial sections revealed that the center of the mass was filled with gray-colored cheesy keratinous materials

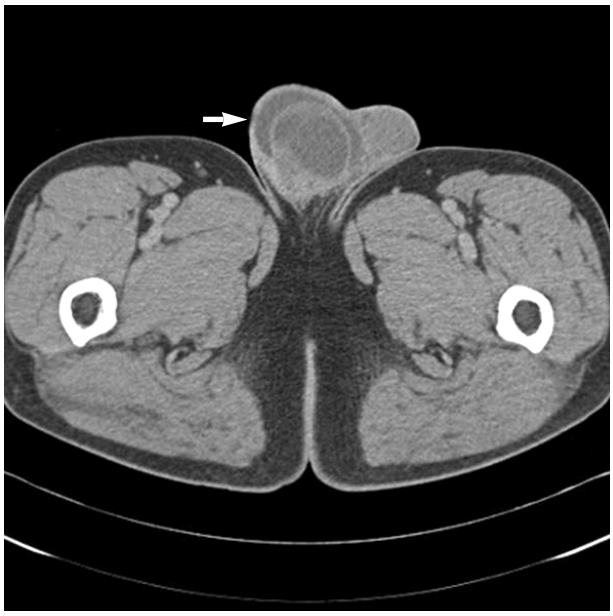

Fig. 1. Abdominal computed tomography shows a well-circumscribed oval shaped mass with heterogeneous internal density (arrow).

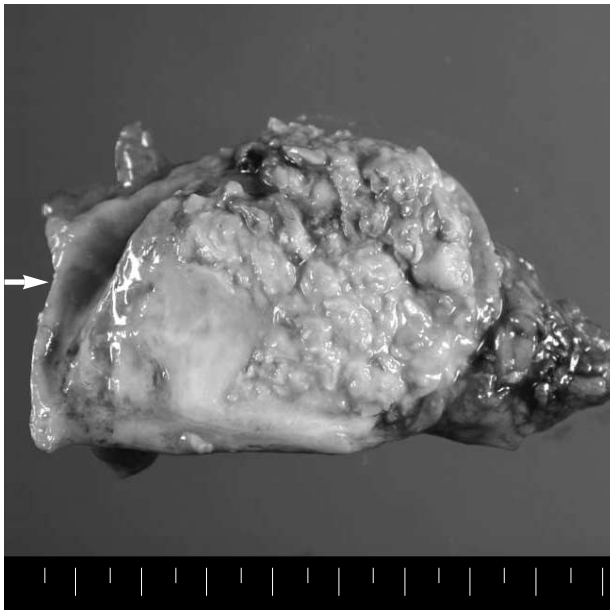

Fig. 2. Photograph of the resected specimen shows that an oval shaped mass nearly replaces the testis. Arrow indicates a hydrocele.

(Fig. 3C). Primary SCC of the testis was diagnosed. Although nearly replaced by the mass, the central portion was filled with well-formed laminated keratinous materials and remnant cavity was partially transformed to dysplastic squamous epithelium (Fig. 3D). The mass invaded the tunica albuginea and extended through the tunica vaginalis. It focally invaded epididymis.

Immunohistochemically, the tumor cells were positive for pancytokeratin (AE1/AE3, prediluted, DAKO, CA, USA), CK7 (OV-TL 12/30; 1:100, DAKO), high molecular weight cytokeratin (34βE12; DAKO), p53 (prediluted, DAKO), and focally reactive for CEA (prediluted, DAKO). Ki-67 proliferation index (prediluted, DAKO) was 30%. They were negative for vimentin (prediluted, DAKO), AFP (prediluted, DAKO), HCG (prediluted, DAKO), placental alkaline phosphatase (PLAP; prediluted, DAKO), D2-40 (D2-40; prediluted, DAKO), CD117 (1:300, DAKO) or CK20 (prediluted, DAKO).

DISCUSSION

Primary testicular SCC is extremely rare, and its diagnosis is important because the majority of the reported testicular SCCs are metastatic, although the lower incidence of secondary carcinomas of the testis is 0.06% (1-4). The reasons for the low incidence of secondary testicular tumors may be ascribed to the low temperature of the scrotum that is an unacceptable environment for growth of metastatic tumor cells (5). The common primary tumors arise from the lung, prostate, gastrointestinal tract, melanoma, and kidney (1-3).

When a SCC component occurs in ovary or testis, the pathologists should distinguish a malignant transformation of teratoma or other mixed germ cell tumors from primary or metastatic SCCs. In the present case, the former was excluded by examining entire specimen in addition to immunonegativity for PLAP, AFP or HCG. Such transformation is a very rare event in the testis. The metastatic SCC was also excluded by thorough survey.

To date, two cases of primary SCCs of the testicular area have been retrieved in the literature (2, 3). One was a testicular tumor derived from malignant transformation of the epidermal cyst, and the other was not a true testicular tumor that has arisen from malignant transformation of a hydrocele. The present case showed that the entire testis was nearly replaced by the mass and the central portion filled with well-formed laminated keratinous materials and remnant cavity was lined by a dysplastic squamous epithelium, indicating that SCC may be derived from epidermal cyst.

Epidermal cyst of the testis is rare, and it accounts for less than 1% of all testicular neoplasm (6). Epidermal cyst of the testis is usually known to take a benign clinical course. Whether it is a neoplasm or not remains a topic of debate, although some show loss of heterozygosity for certain chromosomal loci, supporting a neoplastic pathogenesis.

As the pathogenesis, SCC is sometimes related to chronic inflammatory processes and subsequent squamous metaplasia. However, such relationship has not been evaluated between testicular SCC and chronic scrotal irritation due to its extremely low incidence.

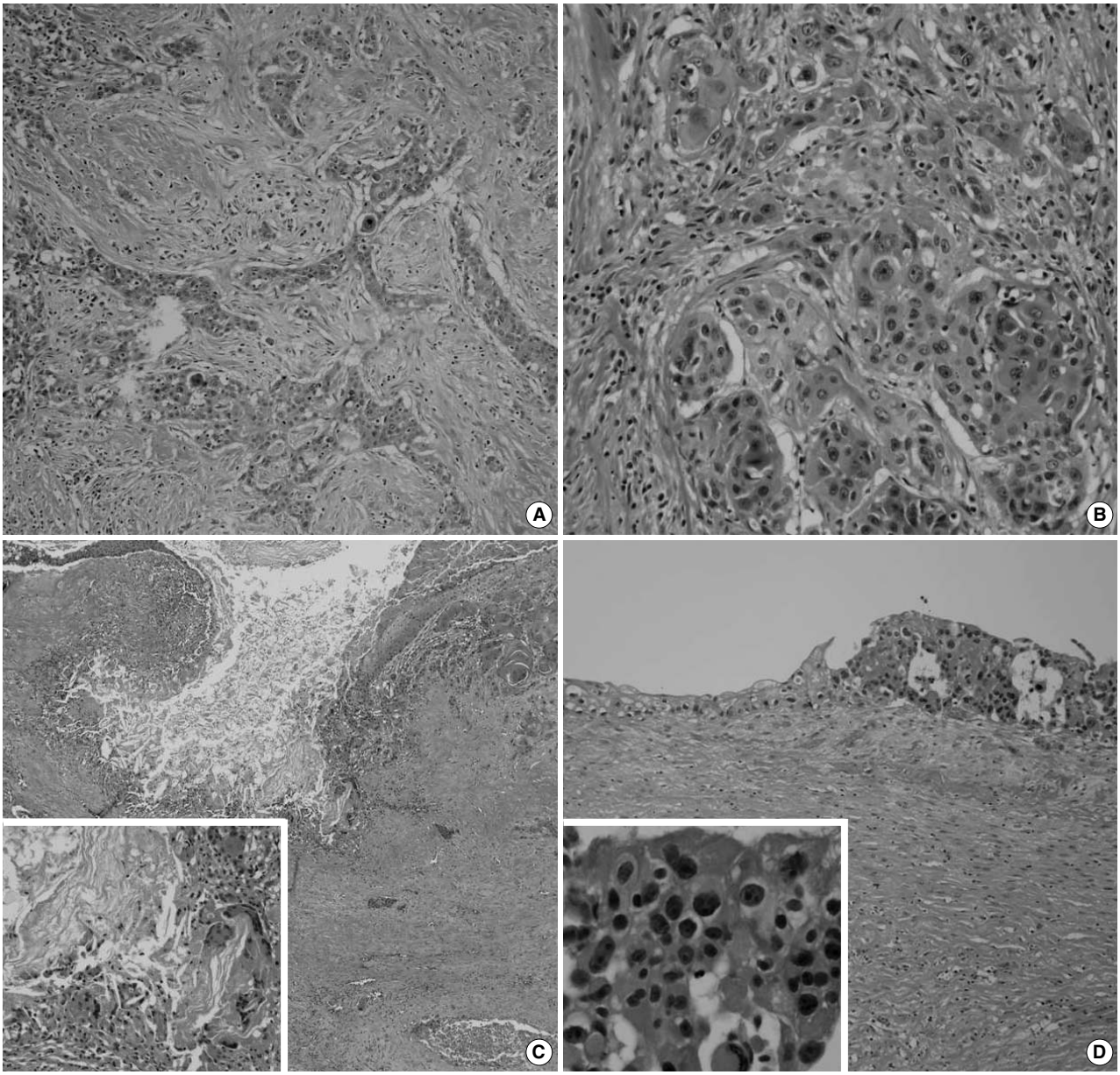

Fig. 3. Histopathological findings of the testis. (A) Nests of squamous cell carcinoma show wall infiltration (H&E stain, ×200). (B) High magnification of neoplastic squamous cells shows orangeophilic cytoplasm and intercellular bridges (H&E stain, ×400). (C) Central cyst, probably epidermal cyst, is filled with laminated linear keratinous materials (×40). Inset indicates foreign body reaction (H&E stain, ×400). (D) The cyst wall is focally lined by mature squamous epithelium (×100). Inset indicates transformation into dysplastic squamous cells (H&E stain, ×1,000).

The present case is unique in that it is the second report of the testicular SCC occurring in a patient without other primary tumors and it may be associated with the preexisting testicular epidermal cyst. Although its incidence is extremely rare and its treatment and prognostic data have not yet been established, the physicians should keep in mind that the primary testicular SCC can present with similar clinical and radiologic features to testicular germ cell tumors.

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