Case report

Paratesticular metastasis from colorectal adenocarcinoma

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ABSTRACT

Paratesticular tumors are rare, especially when they are metastatic. Most of them originate in the prostate, kidney, gastrointestinal tract, lung, and breast. The most common site of metastasis from the gastrointestinal tract is the colon. A 75-year-old male presented with a painless and tense right scrotal mass. He underwent a radical right orchiectomy, and the pathology revealed mucinous cystadenocarcinoma of the paratesticular tissue. Computed tomography revealed focal wall thickening at the rectosigmoid junction and liver nodules. The colonoscopic biopsy of the mass showed adenocarcinoma. Immunohistochemical staining of both sites confirmed the diagnosis of colorectal adenocarcinoma metastatic to the scrotum.

1. Introduction

Paratesticular mucinous adenocarcinoma is rare, regardless of whether it is a primary or a metastatic tumor. The potential primary sites of metastatic tumors are the prostate, kidneys, gastrointestinal tract, lung, and breast. We report a patient with a right scrotal mass, metastasized from a colon adenocarcinoma. Immunohistochemical staining (IHC) confirmed the diagnosis. The relevant literature was reviewed, and the pathology and route of metastasis are discussed.

2. Case report

A 75-year-old man with underlying hypertension and type 2 diabetes mellitus presented with a painless and tense mass in the right scrotum. The mass was found incidentally about 3 weeks prior to presentation and had gradually enlarged in size. Physical examination revealed a mass of $5 \times 5 \text{ cm}^2$ in the right scrotum. It was difficult to differentiate between the testis and the mass. The mass was not translucent. The left testis and the epididymis were normal in size and consistency, without any palpable mass. There were no other symptoms such as changing bowel habits, bloody stool, or tarry stool. Laboratory test results for serum levels of testicular tumor markers $\alpha$-fetoprotein, $\beta$-human chorionic gonadotropin, and lactate dehydrogenase were all in the normal range; nonetheless, the patient was anemic. Testicular sonography revealed a heterogeneous mass. No abnormality was detected on chest radiography. Right inguinal radical orchiectomy was performed, and the mass was irregular and enclosed in tunica vaginalis. The testis was seen near the mass.

Pathological examination revealed a cystic tumor, measuring $7.7 \times 5 \times 4.1 \text{ cm}^2$, in the paratesticular region. When opened, it was found to contain light brown colored liquid and clotted blood, and there was a solid mass in the cyst. The solid portion was soft, measuring $3.2 \times 2.7 \times 2.2 \text{ cm}^2$; the cut surface was yellow to brown in color and mildly glistening. The testis and epididymis were free of the tumor. Microscopy revealed that the tumor arose from the paratestis. It was a unicellular cyst with a solid tumor nodule. The unicellular cystic section was lined with ciliated, stratified, columnar to flattened epithelial cells, and the solid tumor nodule comprised a moderately differentiated adenocarcinoma with a papillary and glandular pattern, mucin production, and necrotic tissue (Figs. 1 and 2). No teratoma was seen. The IHC staining was positive for caudal type homeobox 2 and cytokeratin (CK) 20. Staining for CK7, CK5/6, and calretinin was negative. Mucinous cystadenocarcinoma was diagnosed.

Abdominal computed tomography revealed focal wall thickening at the rectosigmoid junction (Fig. 3). However, colonoscopy found no abnormal lesion on the rectosigmoid area, but revealed a yellowish-white colored mucus-rich mass 60 cm from the anal verge. The pathology of the biopsy was adenocarcinoma (Fig. 4). Furthermore, the tumor marker carcinoembryonic antigen level

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was elevated to 35.11 ng/mL. Based on these findings, the patient was diagnosed with colon cancer with hepatic and paratesticular metastasis.

3. Discussion

Mucinous paratesticular tumors are rare, and only a few cases have been reported. Both intratesticular and paratesticular mucinous tumors arise from the metaplasia of the mesothelium of the tunica vaginalis. Inflammation may result in mesothelial introduction into the testicle or mucinous metaplasia. Tumors may arise from Müllerian remnants, such as the appendix testis. Riedl et al reported the case of an 80-year-old man with testicular adenocarcinoma of the appendix. Teratoma is also another differential diagnosis of mucinous-type intratesticular tumors. However, they occur in younger patients (23–29 years of age) and always have other components within the mucinous epithelial-lined cysts.

The most significant differential diagnostic consideration arises in cases of carcinoma and metastatic carcinoma. The potential primary sites of paratesticular metastatic tumors are the prostate, kidney, gastrointestinal tract, lung, and breast. However, metastatic mucinous tumors in the testicles are more common than primary mucinous testicular tumors. There are many reports of the incidence of metastatic testicular tumors, ranging from 0.02% to 2.5%. It was reported that 17.5% of secondary tumors of the testes or the paratestes come from the digestive organs. The most frequent sites are the colon (28.9%), stomach (26.3%), pancreas (15.8%), bowel (13.2%), and rectum (7.9%), followed by the appendix, bile duct, and jejunum (2.6%). The characteristics of metastatic tumors are multifocality, conspicuous growth in the testicular interstitium, and prominent vascular space involvement. Bilateral involvement strongly suggests metastatic tumors, but the frequency of metastatic tumors to the bilateral testes is low. In our patient, the colon was the first organ suspected for primary cancer because of his elevated carcinoembryonic antigen level. Colonoscopy also revealed a colon mass, and the pathology of the biopsy revealed an adenocarcinoma.
Colon cancer metastasis to the scrotum remains rare. Several routes of metastasis to the paratesticular and testicular tissues are postulated. These pathways include direct invasion along the vas deferens to the epididymis, transperitoneal seeding, retrograde extension by venous or lymphatic routes, and arterial embolization. Many investigators suggest that dissemination occurs most commonly via the lymphatic route. The most frequent site of metastasis to the testis was the sigmoid colon, followed by the cecum, rectum, and other sites of the colon. No study, however, had revealed a frequent genitointestinal site of metastasis to the paratesticular region. Our patient was diagnosed with cancer of the descending colon.

IHC studies confirmed the diagnosis. Previously reported cases of mucinous cystic tumors of the testis are compatible with an intestinal-type epithelium and are either positive for both CK7 and CK20 or positive for CK20 and negative for CK7. Iuga et al reported the case of a 71-year-old man with unilateral intratesticular cystadenocarcinoma with mucinous differentiation. IHC studies were positive for CK20, carcinoembryonic antigen, and mucin 2, and negative for CK7, mucin 5AC, vimentin, thyroid transcription factor 1, Wilms' tumor 1, and cancer antigen 125. The tumor was an intestinal-type ovarian surface epithelial tumor. Our patient was positive for CK20 and negative for CK7. Moreover, the tumor was positive for caudal type homeobox 2 and negative for CK5, CK6, and calretinin. A metastatic adenocarcinoma of a colorectal primary tumor was highly suspected.

In conclusion, mucinous paratesticular tumors are rare. A systemic survey as to whether such tumors were paratesticular primary tumors or metastatic tumors from other organs would provide important information. Colorectal carcinoma is the most common cancer of digestive organs that is metastatic to this area.

Conflicts of interest

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