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Case Report

Clinicopathological features and differential diagnosis of primary bilateral seminal vesicle mucinous carcinoma

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Abstract: Objective: To explore clinical features, imageological examination and differential diagnosis of primary bilateral seminal vesicle carcinoma. Methods Analyzed clinical features, pathological features immunophenotype of 1 case of primary bilateral seminal vesicle mucinous carcinoma. Results: Male patient, aged 51, accompanied with hematospermia, dysuria, but without gross hematuria. PSA was not high, CEA, CA19-9 and CA724 increased, postoperative 3 indicators dropped to normal range. Under microscope, seen a lot of mucus, mucous cells floating or covering inner walls. Cells with severe atypia. MRI showed bilateral seminal vesicles cystic lesions. Substantially bilateral seminal vesicles increased, cystic section, sallow solid areas, yellowish jelly material in capsule. Immunophenotype: CK7 and CA125 of tumor cell were positive, CK20 were focally positive, PSA and CEA were negative. Followed up for 6 months without recurrence and metastasis. Conclusions Primary bilateral seminal vesicle carcinoma is very rare. Differential diagnosis required that it is diagnosed with mucinous carcinoma of adjacent organs. Comprehensive inspection and immunohistochemistry are helpful to the correct diagnosis.

Keywords: Seminal vesicle, mucinous carcinoma, imageological examination, differential diagnosis

Introduction

Primary seminal vesicle adenocarcinoma is very rare, about 60 cases are reported in foreign literature [1, 2], but some individual cases in domestic literature [3]. Anatomic site of seminal vesicle is special, adjacent with multiple organs such as prostate, bladder and rectum and other organs, atypical clinical manifestations, is difficult to identify with surrounding organ metastatic adenocarcinoma. Mucinous carcinoma is extremely rare histologic subtypes in seminal vesicle adenocarcinoma, just one case of primary seminal vesicle mucinous adenocarcinoma is reported in literature [4]. Due to low incidence, currently its clinical pathological features, differential diagnosis and tumor biological behavior were rarely known. We reported 1 case of primary bilateral seminal vesicle mucinous adenocarcinoma and combined with literatures review to increase awareness of this type of tumor.

Materials and methods

Clinical data

Male patient, aged 51, hematospermia and urination difficulty, frequent urination, excessive urination at night, enuresis is painful, without gross hematuria. He had 30-year history of smoking, 40 cigarettes per day. He had quit cigarettes for 6 years, with a heavy drinking history. Preoperative serum PSA is not high, total PSA 3.14 ng/ml, F-PSA 0.29 ng/ml, CEA: 5.53 μg/L, CA19-9 74.60 μ/ml, CA724 16.2874.60 μ/ml, higher than normal, while CA125 9.20 μ/ml in the normal range. MRI (**Figure 1**): bilateral seminal vesicle cystic-solid lesions (91 × 56 × 68 mm in size, characterized by cystic masses) with few bleeding, multiple lymph nodes in pelvic cavity, affecting the adjacent prostate and rectum, may consider cancer. PET result showed: bilateral seminal vesicle characterized by cystic masses, affecting the surrounding tissue, the metabolism of solid masses increased,

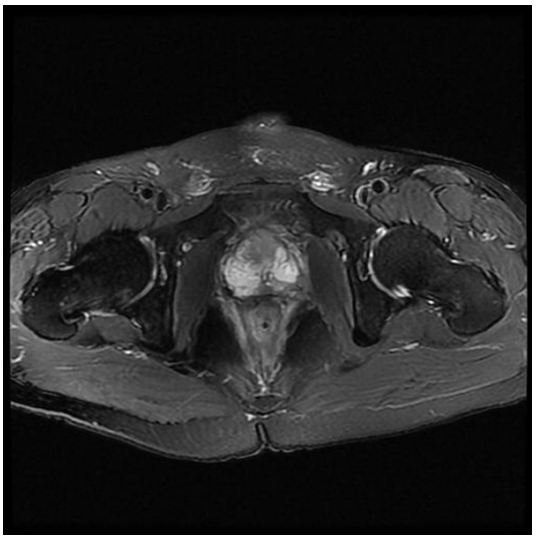

Figure 1. MRI FIG of seminal vesicles mucinous carcinoma. T2-weighted image showed bilateral seminal vesicles area had high signal change.

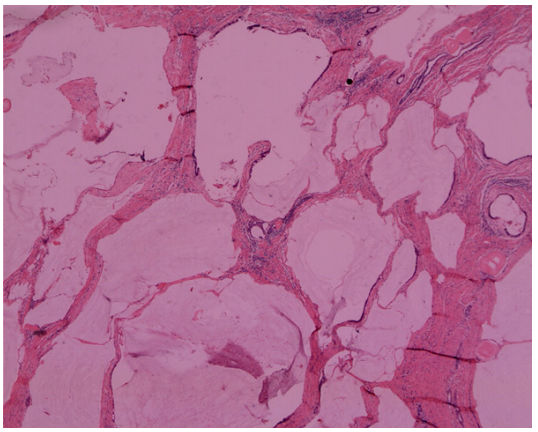

Figure 2. Seminal vesicles mucinous carcinoma is formed by varying sizes mucus, mucus split smooth muscle.

coincided with malignant sign; frequently occurred high metabolic lymph nodes in pelvic cavity, considered transfer, no obvious abnormalities in other examinations. Gastroscopy and colonoscopy revealed no malignant lesions, excluded metastatic gastrointestinal cancer. Performed 4 courses of chemotherapy before operation. Reviewed MRI scans and dynamic contrast enhancement after operation. Compared with pre-operation, tumor reduced, pelvic lymph node seemingly reduced. Performed resection for full bladder, prostate and bilateral seminal vesicles, and performed pelvic lymph node dissection. Detected blood tumor markers, it dropped to normal range (CEA 3.50 μg/L, CA19-9 13.47 μ/ml, CA724 4.64). And then

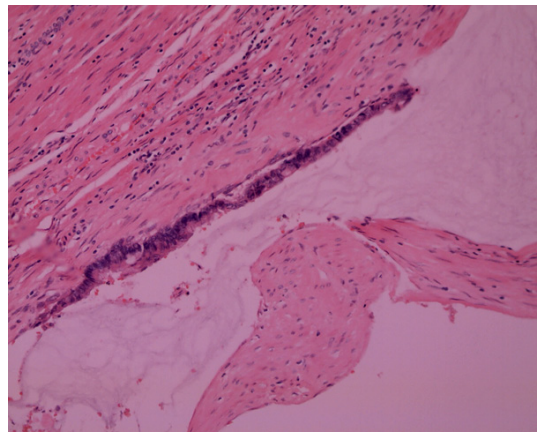

Figure 3. Parts of mucous epithelial cells, with severe atypia.

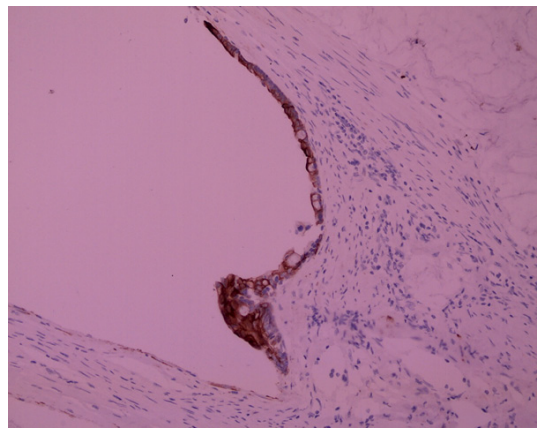

Figure 4. CK7 diffusely expressed in tumor cells.

performed 2 courses of chemotherapy. Followed-up 6 months after operation, no recurrence or metastasis.

Methods

Fixed surgical specimens with 10% neutral buffered formalin, dehydrated and embedded in paraffin, 4 μm sections, H&E staining, observed by light microscope. Immunohistochemistry using EnVision two-step method, according to the instructions. Primary antibodies included PSA, CK7, CK20, P63, P504S, CEA and CA125. All primary antibodies, secondary antibodies and DAB were purchased from DAKO company.

Results

General inspection

Specimens were radical bladder, prostate and bilateral seminal vesicles, partial sperm duct.

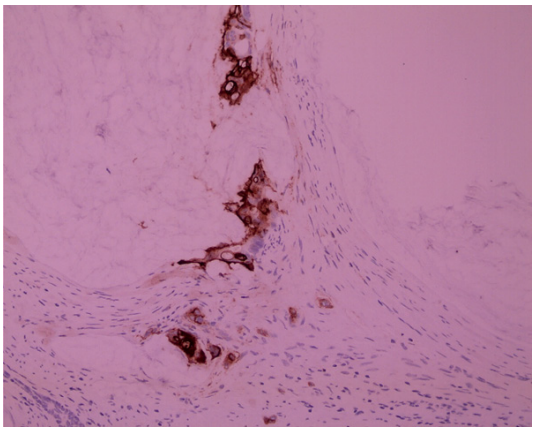

Figure 5. CA125 diffusely expressed in tumor cells.

Bladder(5 cm × 4 cm × 4.5 cm), off white serosal and mucosal surface, smooth, no mass; Prostate (4.8 cm × 4 cm × 3.8 cm), most of section were honeycomb, off white urethral mucosa, smooth; Left seminal vesicle (3.7 cm × 2.2 cm × 1.7 cm), surface rupture, most of section were cystic, capsule filled with yellow, white jelly, tumor involving prostate was visually observed by naked eye; Right seminal vesicle (2.4 cm × 1.5 cm × 1.7 cm), section were cystic, sallow solid areas, yellowish jelly in capsule.

Microscopy

Normal structure of bilateral seminal vesicle disappeared, was composed of a large mucus and a very small amount of epithelial cell cluster. Various size and shape of mucus divided smooth muscle tissue into strip or cryptomere (**Figure 2**), the most mucus was no epithelial component, the inner walls of special mess covered mucous cells, cells with severe atypia (**Figure 3**), heterogenic gland infiltrated in mesenchyme of special mess. Multifocal mucus accompanied calcification. Scattered lymphocyte and focal infiltration seen in mesenchyme smooth muscle tissue. Cancerous tissue focus invaded prostatic capsule fibrous tissue, but there were district boundary between it and prostate tissue. No invaded bladder. Each surgical margins weren't cancerous tissue, pelvic lymph nodes weren't metastasis. Tumors weren't normal seminal vesicle tissue.

Immunohistochemistry

CK7 and CA125 diffusely expressed in tumor cells of mucus (**Figures 4** and **5**). CK20 expressed in focus, PSA, P63, P504S and CEA didn't express.

Pathological diagnosis: primary bilateral seminal vesicles mucinous carcinoma of bilateral seminal vesicles, affected fibrous tissue of prostatic capsule.

Discussion

Seminal vesicle is composed of muscular wall and duplicature, whose epithelium is two-layer structure, including columnar and basal cells. Primary seminal vesicles are rare tumors, malignancy more commonly occurs in adenocarcinoma. In recent years, primary seminal vesicle carcinoma is constantly reported at home and abroad, primary seminal vesicle carcinoma more commonly occurs in about 50-year-old, reported the youngest is 22-year-old [5, 6]. Mucinous carcinoma is special histological subtype of seminal vesicle carcinoma, with low incidence rate, so far only 1 case is reported in the literature [4].

Clinical features

Early phase of primary seminal vesicle carcinoma is asymptomatic, later symptoms is hematuria, hemospermia, urgent urination, frequent micturition, dysuria or uroschesis caused by larger tumor oppression or invade surrounding tissue [5], change in bowel habits [6]. Usually it can be found painless mass above the prostate by rectal touch [5]. In reported literature, PSA of patients with primary seminal vesicles carcinoma are not high [1, 2, 4], CEA may increase or normal [4]. In this paper, tumor markers CEA, CA19-9 and CA724 increased, dropped to the normal range after operation, the correlation between these tumor markers and this tumor needs further observe more cases. Primary seminal vesicle carcinoma often accompanied by urinary system dysplasia ectopic ureter, such as ectopic ureter, renal aplasia or renal agenesis [4, 7].

Imaging diagnostic methods such as CT, MRI, Transrectal Ultrasonography (TRUS) etc., can better show shape and structure of seminal vesicle, revealing the relationship between lesion position, scope and neighbor, contributed to diagnosis and differential diagnosis of seminal vesicles carcinoma [8, 9]. Performed mageological examination for patients with

Table 1. Immunohistochemical expression of primary seminal vesicle carcinoma and metastatic adenocarcinoma of adjacent organs

Primary site	CK7	CK20	PSA	CEA	CA125
Seminal vesicle	+	-/+	-	-	+
Prostate	-	-	+	-	-
Bladder	+	-	-	-	-
Urachus	+	+	-	+	-
Prostatic urethra	+	+	-	-	-
Digestive tract	-	+	-	+	-

hemospermia and hematuria, which could help early detection. Typical representation of imaging showed solid or cystic mass in seminal vesicle area behind bladder, disproportionate cystic and solid components. Seminal vesicle carcinoma tend to invade surrounding tissue, such as prostate, contralateral seminal vesicles, rectum, bladder wall, lower ureter and so on. When the surrounding tissue was invaded, it showed mass with ill-defined margins, bladder and seminal vesicle disappearance [6].

Pathological features

Primary seminal vesicle carcinoma generally manifested seminal vesicle increased, substituted by tumor, nodular, tunica tension increased, tumor ruptured, section characterized by cystic, a few solid [4], cystic areas containing mucus or jelly. Under microscope, seen a lot of mucus, mucous cells floating or covering inner walls. Cells with severe atypia. Mucus may be accompanied with calcification. It was unable to identify metastatic mucinous carcinoma of prostate, rectum, bladder and other organs on histology and morphology. Immunohistochemistry can assist in the diagnosis and differential diagnosis (**Table 1**) [10-14]. Primary seminal vesicle carcinoma PSA and CEA were negative, while CK7 and CA125 were positive [12], CK20 expression was different in reported literature [7, 12]. In this case, CK20 was focally positive. Has been reported MUC-1 of seminal vesicle carcinoma was positive, MUC-5AC was negative [3]. It was also reported CD10 of adenocarcinoma cell may be positive [3].

Diagnosis and differential diagnosis

Clinical symptoms of primary seminal vesicles mucinous carcinoma were not typical, most cases had been discovered at later period, easy to invade surrounding organs, were similar to metastatic mucinous carcinoma of adjacent organs on histology and morphology, so it must be identified before diagnosis. 1) Prostate mucinous carcinoma: It was a special and rare histological subtypes of prostate carcinoma, showed hematuria and dysuria in clinical. More commonly occurred in the elderly. In most cases, PSA increased. The main tumor located in prostate, may invade seminal vesicle in later period. Prostate mucinous carcinoma commonly mixed with classic prostate carcinoma. If found mucinous carcinoma and mucinous carcinoma component in the prostate, should be considered primary prostate. The main tumor of primary seminal vesicles located in seminal vesicle, affecting prostate manifested it involved prostate from outside to inside. Immunohistochemistry showed PSA and P504S of prostate mucinous carcinoma were positive [11], CEA and CA125 were negative, and PSA of seminal vesicles mucinous carcinoma were not high. Immunohistochemistry showed PSA and CEA of tumor cells were negative, CK7 and CA125 were strong positive. From current case, CA125 had more importance in the diagnosis of prostate and primary seminal vesicles. 2) Mucinous carcinoma of prostatic urethra: gland canceration derived from prostate urethra. Early clinical manifestations: mainly hematuria, hemospermia or obstructive uropathy symptoms. In the literature, commonly seen in the elderly [15, 16]. PSA was not high, may accompanied by glandular urethritis, glandular metaplasia, adenocarcinoma in situ and so on. Immunohistochemical markers showed CEA and CK7 of tumor cells were strong positive, CK20 and CK34βE12 were focally positive, and PSA, CA125 were negative [13]. 3) Primary bladder mucinous carcinoma: intestinal metaplasia derived from urothelium and canceration. Clinical manifestations: hematuria or urinary irritation, the main tumor located in mucous membrane, can infiltrate muscular layer and serosa, affecting seminal vesicles, adjacent benign urothelium often accompanied by cystitis [10]. Immunohistochemistry showed CEA of primary bladder mucinous carcinoma were positive, while PSA and CA125 were negative [10]. 4) Mucinous carcinoma of urachus: Mucinous adenocarcinoma of urachal remnants was very rare, mainly in middle-aged men, often occurs in muscle layer of tip or top of bladder [14], didn't destroy mucous membrane in early period, could form ulcers in later

period, mainly as painless hematuria, a little umbilical discharge. Immunohistochemical markers CK7, CK20, CEA, EMA, CDX2, villin and E-cadherin were positive [14], while PSA and CA125 were negative. 5) Mucinous adenocarcinoma of gastrointestinal origin: Especially rectal carcinoma, due to anatomical site approaching to seminal vesicles, late rectal mucinous carcinoma could invade or transfer to seminal vesicles. In early, often occur bloody stool or change in bowel habits. Immunohistochemical markers could help diagnose. CK7, PSA and P504S of mucinous carcinoma of gastrointestinal origin were negative, CK20, CEA [13] and CDX-2 were positive.

Treatment and prognosis

Primary seminal vesicle carcinoma due to late clinical symptoms, most cases have been discovered at later period, the prognosis is poor. Because of the low incidence, there is no uniform treatment. Most reported cases performed seminal vesicles resection, radical cystectomy and prostatectomy and pelvic lymph node dissection. Chemotherapy and hormonal therapy is not sensitive [7]. Lee et al. [4] reported one case of patients with primary mucinous carcinoma was performed resection of left seminal vesicles and dysplastic kidney, ureter and partial bladder and was followed up for 5 years without recurrence or metastasis. In this study, patients performed radical surgery plus preoperative and postoperative and postoperative chemotherapy, followed up for 6 months without recurrence and metastasis. Radical surgery is the key to treatment, is closely related to patients' prognosis, tumor staging surgical margin situation [1, 3].

Disclosure of conflict of interest

None.

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