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Primary Choriocarcinoma of the Urinary Bladder

— A Case Report —

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We report a primary choriocarcinoma of the urinary bladder in a 63-year-old man who presented with painless hematuria. He was diagnosed as having an invasive carcinoma and underwent a total cystectomy. The tumor was diffusely hemorrhagic and occupied the dome of the bladder. Histologically, it consisted of cyto-and syncytiotrophoblasts with extensive hemorrhage. No coexisting transitional cell carcinoma component was present. By immunohistochemistry, the tumor expressed beta-hCG and low-molecular weight cytokeratin intensely while it was negative for CEA or EMA. The post-cystectomy serum beta-hCG was 237mIU/ml, and decreased later. The pertinent literature is reviewed and diagnostic criteria are discussed.

Key Words: *Choriocarcinoma, Urinary bladder, Immnunohistochemical study*

INTRODUCTION

Choriocarcinomas may arise not only in the uterus but also in extragenital locations such as the retroperitoneum, mediastinum, lung, digestive tract and urinary bladder. Choriocarcinomas arising in the urinary bladder are exceedingly rare. With only 18 reported cases in the world literature (Djewitzi et al., 1904; Weinberg et al., 1939; Hymen et al., 1943; Ainsworth et al., 1960; Civantos et al., 1972; Kawamura et al., 1979; Hattori et al., 1980; Obe et al., 1983; Gallagher et al., 1974; Dennis et al., 1984; Yamase et al., 1985; Sone et al., 1989; Morton et al., 1988; Ishkawa et al., 1988). Among the reported patients, three cases were female. They included six pure choriocarcinomas and twelve transitional or undifferentiated carcinomas mixed with components of choriocarcinoma (Civantos et al., 1972; Kawamura et al., 1979; Hattori et al., 1980; Obe et al., 1983; Gallagher et al., 1984; Dennis et al., 1984; Yamase et al., 1985; Sone et al., 1989; Morton et al., 1988; Ishkawa et al., 1988). In this paper, we report a primary choriocarcinoma arising in the urinary bladder in a 63-year-old man.

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A CASE REPORT

A 63-year-old man presented with painless gross hematuria for six months. Three days before admission, he suffered from low abdominal pain with aggravated hematuria. He had a history of myocardiacl infarction 3 years ago. A preoperative CT scan revealed a large infiltrating tumor mass at the dome of the urinary bladder. The right kidney also showed hydronephrosis. No metastasis was found. The testes were normal. A cystoscopic biopsy was interpreted as a high-grade carcinoma with giant cells and extensive hemorrhagic necrosis. The patient underwent a total cystectomy and pelvic lymphadenectomy. After pathologic examination of the resected bladder, it was recommended to assess the serum gonadotropin level.

One week after the operation, the serum beta-hCG was 272mIU/ml. Serum alfa-fetoprotein was in the normal range. By one month after the operation serum beta-hCG had decreased to 45.1mIU/ml. The patient was in good condition without further treatment. At the post-operative 5th week however, serum beta-hCG was elevated to 68.1mIU/ml. Methotrexate (20mg/day) was administrated for 5 days. After the chemotherapy, serum hCG fluctuated within low levels (57.8mIU/ml,

65.4mIU/ml, and 32.0mIU/ml). One year after the operation, the patient is well, and the serum hCG is not elevated.

PATHOLOGICAL FINDINGS

The bladder revealed a bulky mass, measuring 7cm in maximum diameter, at the dome (Fig. 1a).The cut surface was hemorrhagic with multifocal yellow spots (Fig. 1b). The right ureteral opening was partially obliterated. The tumor focally penetrated through the muscle layer and infiltrated into the perivesical adipose tissue. However, the seminal vesicles and prostate were intact. Histologically, the tumor was extensively necrotic, and consisted of syncytiotrophoblasts intermingled with polyhedral mononucleated large cells (Fig. 2). No other neoplastic component was seen. The stroma was highly vascular. Mitotic figures were numerous. Angioinvasion was frequently seen. Adjacent urothelial mucosa was unremarkable without dysplasia or invasive transitional cell carcinoma. Nodal involvement was not present.

Immunohistochemical staining was performed on paraffin-embedded sections using the avidin-biotin-enzyme complex method with the following antibodies (Table 1): anti-beta-chain-hCG (Dacopatts), anti-AFP (BioGenex), anti-carcinoembryonic antigen (BioGenex), anti-cytokeratin (polypeptides 10, 17, 18, Dakopatts), anti-epithelial membrane antigen (BioGenex), and anti-vimentin (BioGenex). The majority of tumor cells displayed diffuse cytoplasmic staining for hCG (Fig. 3a). Syncytiotrophoblasts were intensely immunostained. Adjacent urothelial cells were negative. Both syncytiotrophoblastic giant cells and cytotrophoblastic cells showed diffuse cytoplasmic staining for cytokeratin (Fig. 3b). Most tumor cells were negative for epithelial membrane antigen while normal urothelia were focally immunostained. The tumor was negative for AFP, CEA, and vimentin.

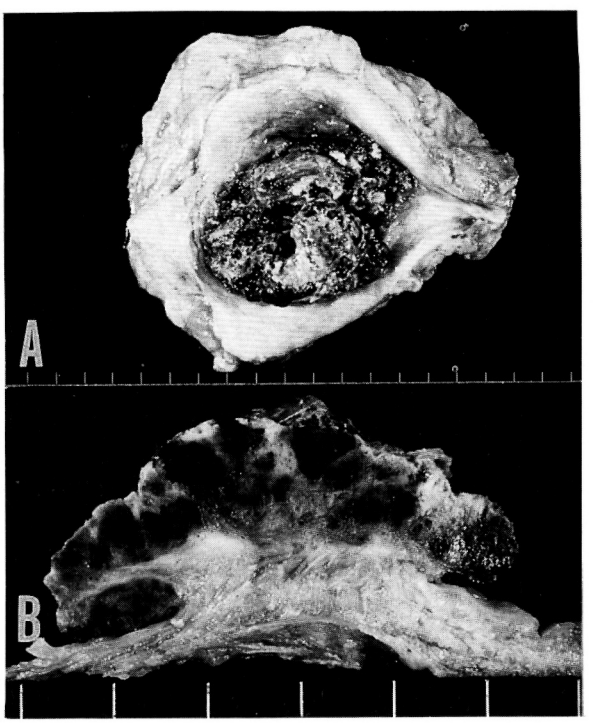

Fig. 1. A huge necrotic mass at the dome of the bladder (A). Diffusely hemorrhagic cut surface (B).

DISCUSSION

Primary choriocarcinomas of the bladder are extremely rare (Djewitzki et al., 1904; Weinberg et al., 1939; Hymen et al., 1943; Ainsworth et al., 1960); there have been only eighteen documented cases described. Among them, only six cases were reported to be pure choriocarcinomas. In 12 other reported cases, components of transitional cell carcinoma were evidently present (Civantos et al., 1972; Kawamura et al., 1979; Hattori et al., 1980; Obe et al., 1983; Gallagher et al., 1984; Dennis et al., 1984; Yamase et al., 1985; Sone et al., 1989; Morton et al., 1988; Ishkawa et al., 1989). The diagnosis of choriocarcinoma should be based on the morphological demonstration of syncytiotrophoblast- or cytotrophoblast-like elements and the presence of hCG in the tumor. It should be mentioned that either of the diagnostic criteria alone may not be sufficient for the diagnosis. Recently, immunohistochemical studies have demon-

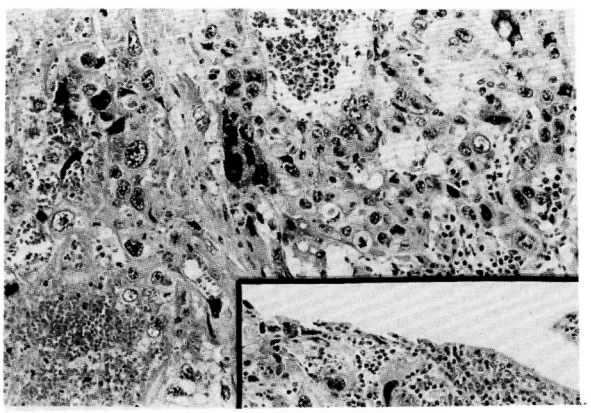

Fig. 2. Syncytiotrophoblastic giant cells with intermingled cytotrophoblastic cells in the hemorrhagic background. (Inset: Abrupt transition from the normal urothelia) (Hematoxylin-Eosin stain, ×80)

Table 1. Results of Immunohistochemical Study

Cell	beta-hCG	Cytokeratin	EMA	AFP	CEA	Vimentin
Syncytiotrophoblasts	+++	+ or ++	−	−	−	−
Cytotrophoblasts	++	++	−*	−	−	−
Normal urothelia	−	+++	++	−	−	−

+++; strong intensity. ++; moderate intensity. +; week intensity. *; a few cells were positive

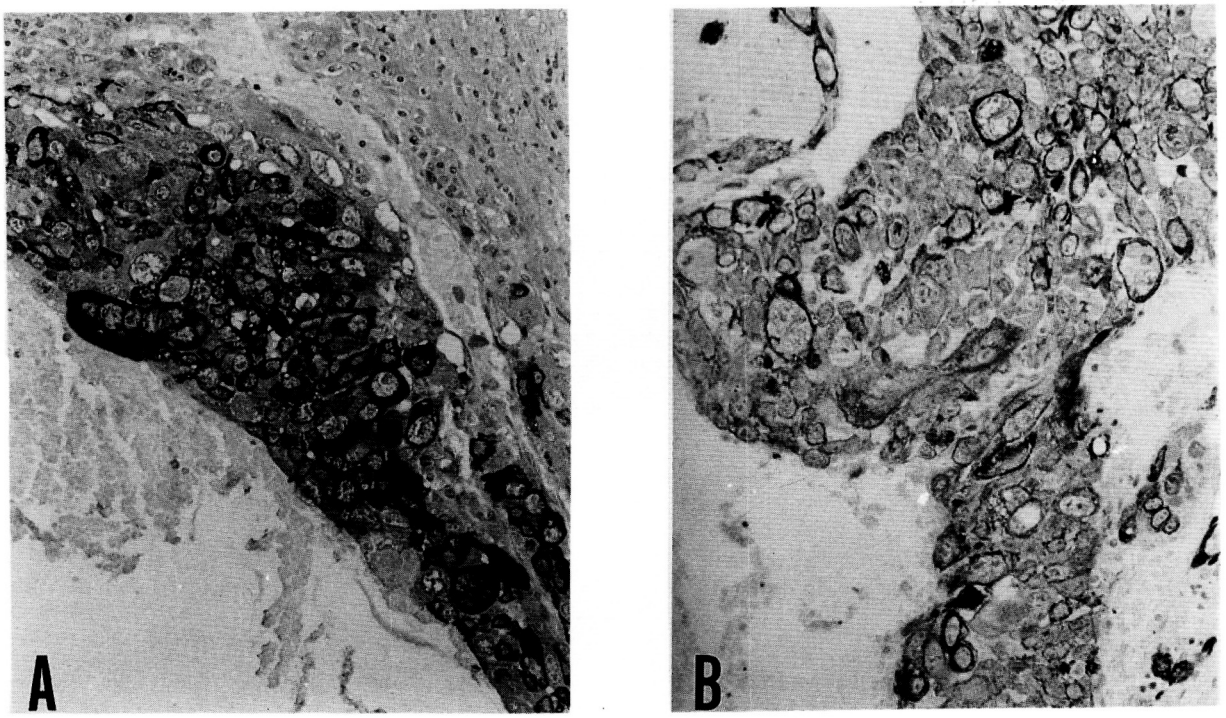

Fig. 3. Tumor cells stained positively with anti-hCG antibody (A) and anti-cytokeratin antibody (B). More intense reaction of the syncytiotrophoblasts in hCG staining.
(immunohistochemical staining: ×400 (a,b))

strated production of placental proteins, including human chorionic gonadotropin (hCG), placental lactogen (pPL), and pregnacy-specific beta-1-glycoprotein (SP-1) in high-grade urothelial neoplasms (Rodenbug et al., 1985; Earl et al., 1987; Campo et al., 1989; Iles et al., 1990). HCG immunoreactive cells were found in 19% of high-grade tumors, and hPL and SP-1 immureactive cells were observed in less than 10% (Campo et al., 1989). Based on these observations, it may be proposed that morphological and functional trophoblastic differentiation may evolve from transitional cell carcinomas.

Among other tumor markers, transitional cell carcinomas express cytokeratins and epithelial membrane antigen. Most transitional cell carcinomas, especially high grade tumors, express CEA (Masui et al., 1988). Our case was negative for CEA and EMA. Normal trophoblasts and gestational choriocarcinomas express low molecular weight cytokeratin as this tumor did. These immunohistochemical results were also supportive for the diagnosis of pure choriocarcinoma along with the strong expression of beta-hCG.

All choriocarcinomas of the urinary bladder were reported to be highly malignant and fatal. Most cases, especially pure choriocarcinoma, presented with early distant metastasis and fast progression. In our case, however, the tumor was confined to the bladder without regional or distant metastasis. Currently, one year after the operation, the patient is in good condition.

We consider that our case is the first resectable pure primary choriocarcinoma of the urinary bladder

without regional distant metastasis.

REFERENCE

Ainsworth RW, Gresham GA: *Primary choriocarcinoma of the urinary bladder in a male. J Pathol Bacteriol 79L185-92, 1960*

Campo E, Algaba F, Palacin A, Germa R, Sole-Balcells FJ, Cardesa A: *Placental proteins in high-grade urothelial neoplasm. An Immunohistochemical study of human chorionic gonadotropin, human placental lactogen, and pregnancy specific beta-1-glycoprotein. Cancer 63: 2947-504, 1989*

Civantos F, Rywlin AM: *Carcinomas with trophoblastic differentiation and secretion of chorionic gonadotrophin. Cancer 29:789-98, 1972*

Dennis PM, Turner AG: *Primary choriocarcinoma of the bladder evolving from a transitional cell carcinoma. J Clin Pathol 37:503-5, 1984*

Djewitzki WS: *Uber einen fall von chorioepitheliom der herblase. Virchows Arch (A), 178:451-3, 1904*

Earl U, Bulmer JN, Briones A: *Placenta accreta: an immunohistochemical study of trophoblastic population. Placenta 8:273-6, 1987*

Gallagher I, Lind R, Oyasu R: *Primary choriocarcinoma of the urinary bladder in association with undifferentiated carcinoma. Hum Pathol 15:793-5, 1984*

Hymen A, Leiter HE: *Extratesticular chorioepithelioma in a male probably primary in the urinary bladder. J Mount Sinai Hosp 10:212-9, 1943*

Hattori M, Yoshimoto Y, Matsukura S: *Qualitative and quantitative analyses of human chorionic gonadotropin and its subunits produced by malignant tumors. Cancer 46:355-61, 1980*

Iles RK, Purkis PE, Whitehead PC, Liver RT, Leight I, Chard T: *Expression of beta human chorionic gonadotropin by non-trophoblastic non-endocrine 'normal' and malignant epithelial cells. Br J Cancer 61:663-6, 1990*

Ishkawa J, Nishimura R, Maeda S, Hamaini G, Sugiyama T, Kanidomo S: *Primary choriocarcinoma of the urinary bladder. Acta Pathol Jpn 38:113-20, 1988*

Kawamura J, Rhinsho K, Taki Y, Yoshida O, Imura H, Adach: T, Hattori M: *Choriocarcinoma and undifferentiated cell carcinoma of the bladder with gonadotropin secretion. J Urol, 121:684-6, 1979*

Masui T, Asamoto M, Imaida K, Fukushima S, Okamaura T: *Primary choriocarcinoma of the urinary bladder. Jpn J Clin Oncol 18:59-64, 1988*

Morton KD, Burnett RA: *Choriocarcinoma arising in a transitional cell carcinoma of bladder: a case report. Histopathology 12:325-8, 1988*

Obe JA, Rosen N, Koss LG: *Primary choriocarcinoma of the urinary bladder. Report of the case with probable epithelial origin. Cancer 52:1405-7, 1983.*

Rodenbug CJ, Nieuwennuyzen Kruseman AC, de Maaker HA, Fleuren GJ, von Oosterom AT: *Immunohistochemical localization and chromatographic characterization of human chorionic gonadotropin in a bladder carcinoma. Arch Pathol Lab Med 109:1046-8, 1985*

Sone A, Furukawa y, Nakatsuka S, Tanaka H: *Primary choriocarcinoma of the bladder: a case report of autopsy. Nippon Hinyokika Gakkai Zesshi 90:902-6, 1989*

Weinberg T: *Primary choriocarcinoma of the urinary bladder in a male. Report of a case: Am J pathol 15:783-5, 1939*

Yamase HT, Wurzel RS, Nieh PT, Gondos B: *Immunohistochemical demonstration of human chorionic gonadotropin in tumors of the urinary bladder. Ann Clin Lab Sci 15:414-7, 1985*