



Female patient's outcome of primary bladder clear cell carcinoma managed with radical cystectomy: A case report

Xue-bin Wang, Bin Jiang*

Department of Urology Surgery, Dalian Municipal Friendship Hospital, Dalian, 116001, Liaoning Province, China

ARTICLE INFO

Keywords:

Clear cell carcinoma
Urinary bladder
Radical cystectomy
Immunohistochemistry staining

ABSTRACT

Primary clear cell carcinoma of the urinary bladder is extremely rare reported only in case report or small case series. Due to its rarity, no consensus or recommendations are made on how to manage PCCUB and the pathogenesis of PCCUB is not clear. Based on histopathology and immunohistochemistry, a 58-year-old woman was diagnosed as PCCUB. The patient underwent radical cystectomy. Massive ascites and multiple lymph node metastasis occurred 6 months later. The diagnosis of PCCUB mainly depends on histopathology and immunohistochemistry. Although radical cystectomy is mainly applied for PCCUB treatment, the prognosis is poor in most cases.

1. Introduction

Bladder cancer is one of the most common urinary malignancies, of which 85% is urothelial carcinoma. The other major bladder tumour histology includes squamous cell carcinoma, adenocarcinoma and undifferentiated carcinoma¹ with the existence of unusual histological variant bladder cancer. Primary clear cell carcinoma of urinary bladder is exceedingly rare, with less than 100 cases reported to our knowledge. Here, we reported the case of a 58-year-old woman presented with initial clinical manifestations of dysuria and hematuria. A transurethral resection of the bladder was performed, and the histological examination exhibited clear cell carcinoma and suspected muscle invasion. The patient underwent radical cystectomy, hysterectomy with double adnexectomy, total urethrectomy and double-barrel ureterostomy. The clear cell carcinoma of the bladder was confirmed the histological results.

2. Case presentation

A 58-year-old woman presented with a complaint of frequent urination with dysuria for 1 year and intermittent hematuria for 5 months. She had no history of tobacco or cigarette smoking, and she had never suffered endometriosis previously. The patient was operated with indwelling catheterization in another hospital because of bladder outlet obstruction. Physical examination revealed obvious edema of the vulva

and hard texture of the entire urethra on transvaginal palpation. The results were normal except for hematuria measured by urinalysis. The CT scan did not show hydronephrosis and any enlargement of the regional lymphnodes, but only a thickening of the wall of the bladder. No cancer cells were found in 3 urine exfoliated cytology examinations. TURB was administrated and the result of the histological examination was "clear cell carcinoma and suspected muscle invasion". The patient underwent radical cystectomy, hysterectomy with double adnexectomy, total urethrectomy and double-barrel ureterostomy. The histological examination verified clear cell carcinoma of the bladder (Fig. 1), which was located in the bladder triangle and the left and right lateral walls and the size was 9*4*1.5 cm (Fig. 2). The cancer infiltrates the adipose tissues outside the bladder wall, urethra, both ovaries, fallopian tubes and uterus. A positive ureteral margin was exhibited, while margins of vagina and both ureters are negative. Lymph node metastases were present around the bladder (1/1). IHC: PAX8 (positive), CA125 (positive), CK (34βE12) (partial positive), P53 (positive, in 10% of tumor cells), Ki-67 (positive, in 40% of tumor cells) (Fig. 1), P63 (negative), GATA-3 (negative), ER (negative), PR (negative), P504s (negative), PSA (negative) and PSAP (negative). 6 months later after refusal of post-operative chemoradiotherapy, CT showed ascites (Fig. 3A) and multiple enlarged lymph nodes in the retroperitoneum (Fig. 3B) and bilateral inguinal areas (Fig. 3C), indicating metastasis.

* Corresponding author. Department of Urology Surgery, Dalian Municipal Friendship Hospital, No.8 Sanba Square, Zhongshan District, Dalian, 116001, Liaoning Province, China.

E-mail address: urologyandurology@126.com (B. Jiang).

<https://doi.org/10.1016/j.eucr.2022.102196>

Received 18 July 2022; Received in revised form 16 August 2022; Accepted 20 August 2022

Available online 26 August 2022

2214-4420/© 2022 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Abbreviations

PCCUB	primary clear cell carcinoma of urinary bladder
TURB	transurethral resection of the bladder
CCC	clear cell carcinoma

3. Discussion

Clear cell carcinomas are common variant not only in the urinary system including kidneys and urethra, but also in the female reproductive system, including the vagina, uterus and ovaries. Dow & Young Jr. first reported primary clear cell carcinoma in 1968 and up to now, the number of reported cases are less than 100. However the site of primary clear cell carcinoma origin is still unknown. At first, tumors were initially considered as arising from mesonephric rests in trigone area and designated as mesonephric adenocarcinoma. However convincing evidence for mesonephric origin was limited. Along with the development of research, many experts believe that PCCUB originated from the Miller duct,² and may be endometriosis-related tumors. In 2016, WHO classified PCCUB as Miller duct tumor with endometrial adenocarcinoma. However, a recent study presented evidence for urothelial origin in most clear cell carcinomas.³

The current diagnosis of PCCUB of the urinary bladder is largely based on the histologic and IHC staining features. Regarding morphology, tubulocystic was categorized as the main histologic patterns common, followed by apillary pattern and diffuse pattern. Some of them have a mixed histologic pattern. Other more frequent features includes hobnail cells, clear cytoplasm and solid growth.¹ In the majority of reported cases in IHC, results of CK7, CAM2.5, PAX8, HNF-1 β , CA125, and AMACR were positive. CD10, CK20, Uroplakin, CEA, PAX2 can also be positive, while p63, PSA, PSAP, ER, PR, GATA3 were all negative. PAX8, PAX2, Ki-67, p53, and CK7 are applied for the differential diagnosis of bladder clear cell carcinoma, especially PAX8 and PAX2 play an important role in judging the histological origin of the tumor.⁴

As we all know, clear cell carcinoma can appear in a variety of locations, the most frequent of which is the ovary. However, when clear cell carcinoma develops in the female reproductive system, ER and PR are usually positive, and the patients are younger. Because ER and PR were negative in this case, the clear cell carcinoma originated in the bladder and infiltrated the female reproductive system; there was no possibility that it was an ovarian or endometrial primary spreading to the bladder.

No consensus or recommendations were made on administration of PCCUB due to its lack of reported cases. It was suggested that the

treatment should largely follow the usual management of bladder cancer. Patients typically undergo some form of surgical resection such as transurethral resection, total cystectomy, partial cystectomy, or radical surgery accompanied by chemotherapy and/or radiation. Although some cases responded well with chemotherapy and radiotherapy, the efficacy of these two non-surgical therapy is still uncertain. Those with muscle invasive disease experienced survival benefit from total cystectomy compared with partial cystectomy. As intravesical chemotherapy following TURBT cannot prevent recurrence of tumor, TURBT is not recommended.⁵ In muscle invasive cases of PCCUB, type of surgical treatment was highly associated with survival—survival was improved when treated with complete cystectomies, which was consistent with standard of care for carcinomas of the urinary bladder.

4. Conclusion

The PCCUB is rare, with only sporadic cases reported in literature and hematuria is the most frequent presenting symptoms. Characteristic histological and immunohistochemical features play an important role on diagnosis of PCCUB. The precise treatments are vague, radical cystectomy is major operation for treatment and the prognosis is poor in most cases. The detail information of more cases was required and a uniform therapeutic guideline was needed to be established.

Ethics approval

Ethics approval and consent to participate was not applicable.

Written informed consent for publication was obtained from the patient.

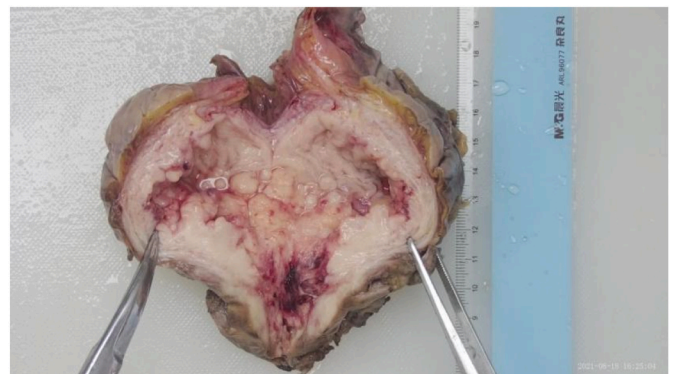


Fig. 2. Macroscopic examination of the cystectomy specimen.

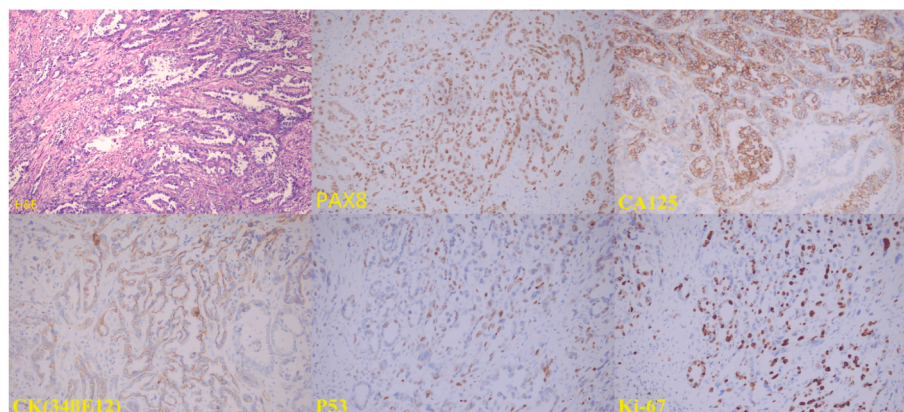


Fig. 1. H&E ($\times 100$) and Immunohistochemistry staining of the mass ($\times 200$).

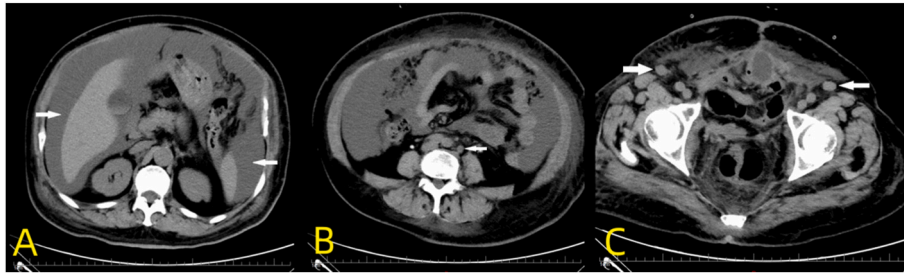


Fig. 3. CT after 6 months. Ascites (Arrow) (A). Enlarged lymph node in the retroperitoneum (Arrow) (B). Enlarged lymph nodes in the bilateral inguinal areas (Arrow) (C).

Funding

Funding was not applicable.

Declaration of competing interest

The authors have no conflicts of interest to disclose.

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

References

1. Chan OT, Chan WS, Poon YT, et al. Clear cell carcinoma of the urinary bladder: a systematic review. *J. Int Urol Nephrol.* 2021;(1).
2. Miller EM, Sun Y, Richardson I, et al. Vesical clear cell adenocarcinoma arising from endometriosis: a mullerian tumor, indistinguishable from ovarian clear cell adenocarcinoma. *J. Gynecologic. Oncol. Rep.* 2016;18:8–10.
3. Sung MT, Zhang S, MacLennan GT, et al. Histogenesis of clear cell adenocarcinoma in the urinary tract: evidence of urothelial Origin. *J. Clin Cancer Res.* 2008;14(7): 1947–1955.
4. Tong GX, Weeden EM, Hamele-Bena D, et al. Expression of PAX8 in nephrogenic adenoma and clear cell adenocarcinoma of the lower urinary tract: evidence of related histogenesis? *Am. J. Surg. Pathol.* 2008;32(9):1380.
5. Moradi M, Shojaei S, Kaseb K, et al. Primary clear cell carcinoma of urinary bladder: a case report. *J. Urology Case Rep.* 2018;16:41–43.