The Korean Journal of Pathology 2010; 44: 216-9
DOI: 10.4132/KoreanJPathol.2010.44.2.216

Primary Malignant Melanoma of the Urinary Bladder – A Case Report –

Sung-Hak Lee · Eun-Deok Chang
Eun-Jung Lee · Chang-Suk Kang

Department of Hospital Pathology,
The Catholic University of Korea
College of Medicine, Seoul, Korea

Received : January 14, 2009
Accepted : October 6, 2009

Corresponding Author
Eun-Deok Chang, M.D.
Department of Hospital Pathology, The Catholic University of Korea College of Medicine,
65-1 Geumo-dong, Uijeongbu 480-717, Korea
Tel: 031-820-3160
Fax: 031-820-3877
E-mail: changed@catholic.ac.kr

Primary malignant melanoma in the bladder is very rare, with only 18 cases having been currently reported. A 65-year-old male patient presented with a 5-month history of gross hematuria. On ultrasonography, an 8.1 × 6.1 cm mass was revealed on the bladder wall. A partial cystectomy was performed. Microscopically, the tumor was composed of atypical, pigmented melanocytes that were positive for S-100 protein and they were negative for human melanoma black-45. Although he underwent supportive therapy, an 8.7 × 5.9 cm mass occupying the prevesical space was noted on a follow-up computed tomography scan 4 months later. Two nodules of the left lower lung and multiple enlarged lymph nodes in the left external iliac chain were also revealed. The patient declined any further treatment. The histogenesis of primary bladder melanoma is uncertain, but an origin from neural crest cells has been proposed. The prognosis for patients with this tumor is still poor despite the availability of several therapeutic options.

Key Words : Melanoma; Urinary bladder

A primary malignant melanoma of the genitourinary tract is a rare lesion that accounts for only 0.2% to 1% of all melanomas.[1,2] Urethral melanoma has been well-described, although it is infrequently seen. However, primary malignant melanoma of the urinary bladder is extremely rare and indeed, only 18 cases have currently been reported.[1,2] We present here our case report of a patient with a primary malignant melanoma of the urinary bladder for which immunohistochemical and electron microscopic studies were performed, and we briefly discuss human melanoma black (HMB)-45 negative melanoma and review the related published literature.

CASE REPORT

A 65-year-old male presented with a 5-month history of gross hematuria and perianal area discomfort. On admission, he also complained of urinary frequency, urgency, and nocturia. The patient's medical history included diabetes and hypertension that he had suffered with for 20 years. The general physical examination was unremarkable. Routine hematologic tests revealed anemia of chronic disease and iron deficiency anemia. On ultrasonography, an 8.1 × 6.1 cm heterogenous mass was shown within the lumen of the urinary bladder and the mass was connected to the anterior bladder wall via a stalk. Diffuse thickening of the bladder wall was also noted. A transurethral resection was performed, but due to massive blood clots obscuring the cystoscope, the resection was converted to a laparotomy with partial cystectomy. Microscopically, the tumor was composed of atypical, pigmented melanocytes (Fig. 1A). These cells had invaded the lamina propria and muscular layers. The immunohistochemical study showed the tumor cells were positive for S-100 protein and vimentin, and they were negative for HMB-45, cytokeratin 7 and 20, actin, and desmin (Fig. 1B, C). On electron micrograph, the tumor cells were observed to have narrow or sometimes slightly larger rims of cytoplasm around the nuclei, and the nuclei were highly irregular. The cytoplasm contained some profiles of rough endoplasmic reticulum, including dark bodies,[3,4] and these findings were consistent with malignant melanoma (Fig. 2).

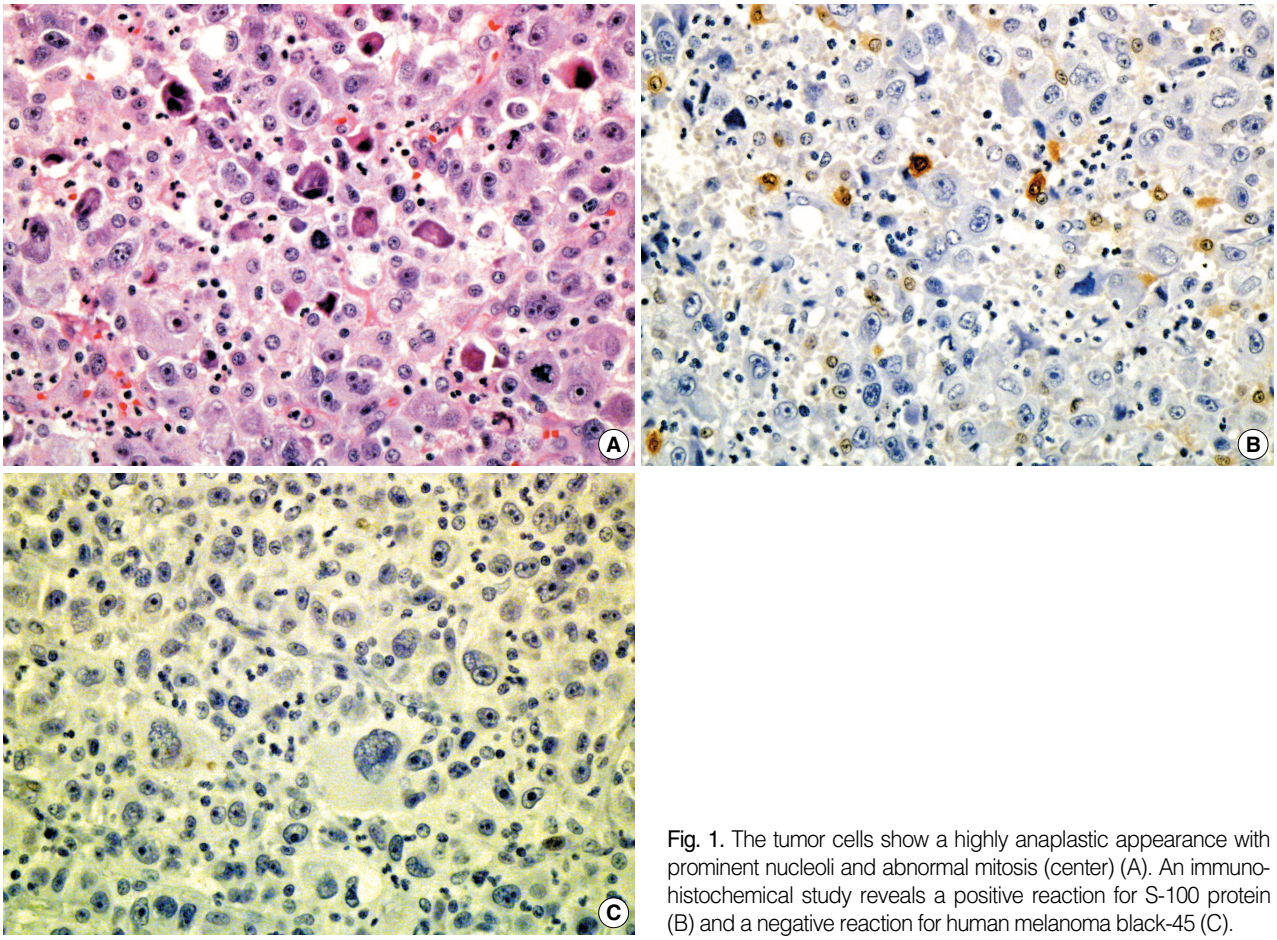

Fig. 1. The tumor cells show a highly anaplastic appearance with prominent nucleoli and abnormal mitosis (center) (A). An immunohistochemical study reveals a positive reaction for S-100 protein (B) and a negative reaction for human melanoma black-45 (C).

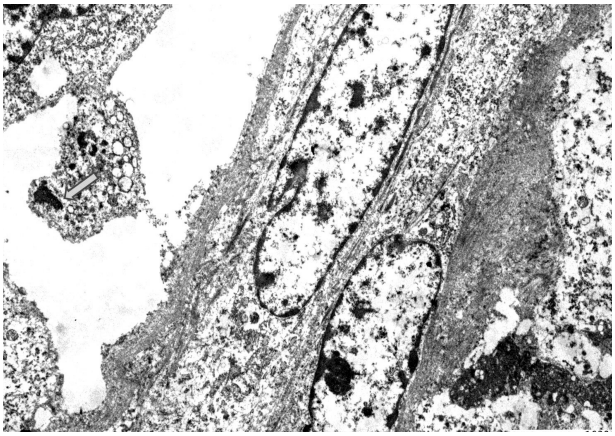

Fig. 2. The tumor cell has a large, irregular nucleus and a prominent nucleolus with heavily pigmented melanosomes (dark body).

No evidence of another primary tumor was identified despite an exhaustive investigation for metastasis, including a chest X-ray, computed tomography (CT) scan, and dermatologic evaluations. Although the patient underwent supportive therapy, a

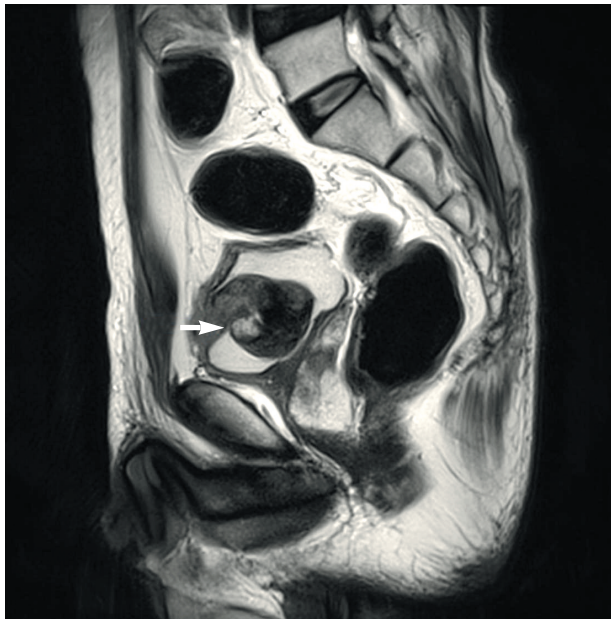

Fig. 3. A large heterogenous mass occupying the prevesical space is noted.

newly developed 8.7 × 5.9 cm heterogenous mass occupying the prevesical space was observed on the follow-up CT scan 4 months later (Fig. 3). The mass extended to the right lower and anterior abdominal wall, and the right inguinal canal. In addition, two nodules in the left lower lung and multiple enlarged lymph nodes within the left external iliac chain were also shown. The patient declined any further treatment and was discharged.

DISCUSSION

Malignant melanoma involving the urinary tract is more commonly a secondary tumor than a primary tumor. According to Niederberger and Lome,[5] 45% of patients dying of malignant melanoma have metastases to the kidney and 18% have bladder metastases. However, primary malignant melanoma in the urinary tract, and especially in the bladder, is very rare. This is the first case reported in Korea.

The age of the patients with this tumor at presentation has ranged between 46 and 81 years (average, 57 years). There is no gender predominance with a male-to-female ratio of 1 : 1. Most cases present with hematuria and/or dysuria as the initial symptoms.[6]

It is often difficult to determine whether a bladder melanoma is primary or metastatic. Ainsworth *et al*.[7] postulated the following criteria for designating a bladder melanoma as a primary lesion:[8] 1) no history of previous cutaneous lesions, 2) no evidence of regressed cutaneous malignant melanomas, 3) no evidence of other visceral primary melanomas, 4) the pattern of recurrence should be consistent with the region of the initial malignant melanoma and 5) the margins of the bladder lesion should contain atypical melanocytes that are similar to those commonly seen in the periphery of the primary mucous membrane lesions (Fig. 4). The present case met all these criteria, with the exception of number 4. Because the patient declined further evaluation and treatment, any additional biopsy or excision was not performed.

Histologically, melanoma of the bladder resembles other melanomas and the tumor consists of large malignant cells arranged in nests with variable amounts of pigment.[9] The presence of epitheliotropism or intramucosal atypical melanocytic proliferation may indicate that the tumor is a primary tumor in the genitourinary tract.[1] In the present case, the presence of epitheliotropism as well as the pagetoid spread in the urothelium of the bladder suggested a primary melanoma, and this was confirmed by the clinical examination (Fig. 5).

HMB-45 immunoreactivity is relatively specific for mela noma, but its sensitivity is relatively low and it has been reported that a significant proportion (10% to 40%) of malignant melanomas is HMB-45 negative.[10]

The histogenesis of primary bladder melanoma is uncertain, and an origin from neural crest cells has been proposed.[9] Melanocytes migrate from their origin in the neural crest through the mesenchyme, and they are ultimately deposited in the skin and hair follicles. During migration, if these cells stop in an ectopic location such as the developing urinary bladder and they subsequently undergo neoplastic change in post-natal development, then primary malignant melanoma of the bladder would ensue.[6] According to Dahm and Gschwend,[9] there is no association between malignant melanoma and melanosis of the bladder, and the latter is a benign condition that is charac-

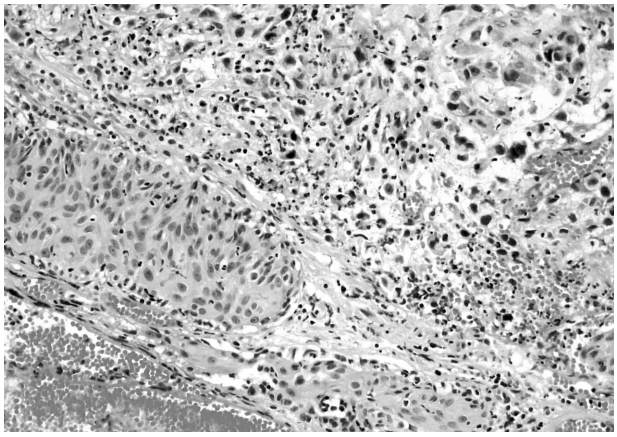

Fig. 4. The margin of the bladder lesion contains atypical melanocytes similar to those commonly seen in the periphery of primary mucous membrane lesions.

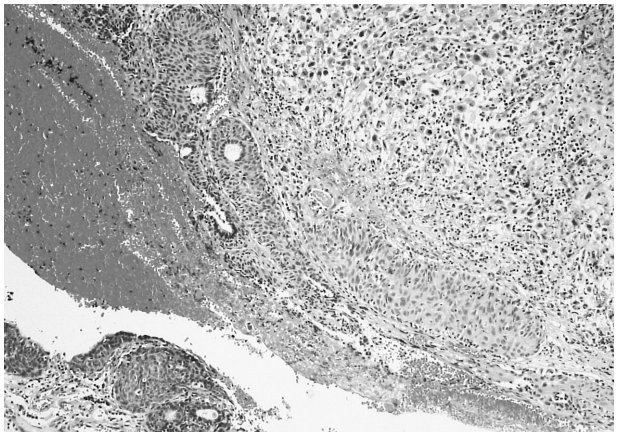

Fig. 5. The intramucosal atypical melanocytic proliferation is shown and this may indicate that this is a primary tumor in the genitourinary tract.

terized by hyperpigmentation of the urothelium due to an enrichment of cytoplasmic melanin granules.

Because of its low incidence, it does not appear to be uniform in the treatment protocol for bladder melanoma.[2,5] A variety of therapeutic modalities, including transurethral re-section, partial cystectomy, total cystectomy with urinary diversion, chemotherapy, radiation therapy and immunotherapy with interferon-alfa have been used, singly or in combination. Despite these disparate modalities, the prognosis of patients with this tumor is still poor.[5] The majority of patients present with hematuria, which must be regarded as a late symptom of a locally advanced melanoma, and so the poor prognosis could be explained by a subsequent delayed diagnosis.[2,5]

Considering the poor prognosis due to a delayed diagnosis, the pathologist should be alert for diagnosing this type of neoplasm of the genitourinary tract. Systematically investigating bladder melanoma is limited by the rarity of these lesions. Therefore, as is the case for other rare tumors, future multi-institutional studies are needed to advance our understanding of this tumor, to evaluate treatment strategies and to predict the patient's outcome.

ACKNOWLEDGMENT

The authors thank Dr. JY Ro (Department of Pathology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea) for reviewing the case and confirming the diagnosis.

REFERENCES

1. Gupta R, Bhatti SS, Dinda AK, Singh MK. Primary melanoma of the urethra: a rare neoplasm of the urinary tract. Int Urol Nephrol 2007; 39: 833-6.
2. Pacella M, Gallo F, Gastaldi C, Ambruosi C, Carmignani G. Primary malignant melanoma of the bladder. Int J Urol 2006; 13: 635-7.
3. Turbat-Herrera EA, Herrera GA. Electron microscopy renders the diagnostic capabilities of cytopathology more precise: an approach to everyday practice. Ultrastruct Pathol 2005; 29: 475-82.
4. Eyden B, Pandit D, Banerjee SS. Malignant melanoma with neuroendocrine differentiation: clinical, histological, immunohistochemical and ultrastructural features of three cases. Histopathology 2005; 47: 402-9.
5. Niederberger CS, Lome LG. Primary malignant melanoma of urinary bladder. Urology 1993; 41: 72-4.
6. De Torres I, Fortuño MA, Raventos A, Tarragona J, Banus JM, Vidal MT. Primary malignant melanoma of the bladder: immunohistochemical study of a new case and review of the literature. J Urol 1995; 154: 525-7.
7. Ainsworth AM, Clark WH, Mastrangelo M, Conger KB. Primary malignant melanoma of the urinary bladder. Cancer 1976; 37: 1928-36.
8. Stein BS, Kendall AR. Malignant melanoma of the genitourinary tract. J Urol 1984; 132: 859-68.
9. Dahm P, Gschwend JE. Malignant non-urothelial neoplasms of the urinary bladder: a review. Eur Urol 2003; 44: 672-81.
10. Xu X, Chu AY, Pasha TL, Elder DE, Zhang PJ. Immunoprofile of MITF, tyrosinase, melan-A, and MAGE-1 in HMB45-negative melanomas. Am J Surg Pathol 2002; 26: 82-7.