# *Primary malignant melanoma of the prostate: case report and review of the literature*

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*Primary malignant melanoma of the prostate is very rare. Most cases attributed to the prostate actually originate from the prostatic urethra. Due to its infrequency, primary malignant melanoma of the genitourinary tract presents a difficult diagnostic and management challenge. We report a case of primary malignant melanoma of the prostate found incidentally following transurethral resection of the prostate (TURP).*

**Key Words:** primary, malignant melanoma, prostate

## Introduction

Primary malignant melanoma of the prostate is very rare. Primary malignant melanoma of the genitourinary tract comprises less than 1% of all malignant melanomas.[1] The majority of primary malignant melanomas of the genitourinary tract develop in the penis and distal urethra.[1] Involvement of the proximal urethra is uncommon.[2] There have been even fewer cases of primary malignant melanoma of the prostate with most cases attributed to the prostate actually being prostatic urethral in origin.[1-4] The first reported case of primary malignant melanoma of the prostate was published in 1953.[2] Due to their infrequency, primary malignant melanoma of the genitourinary tract presents a difficult diagnostic

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and management challenge. We report a case of primary malignant melanoma of the prostate found incidentally following transurethral resection of the prostate (TURP).

## Clinical case

A 71 year-old white male presented to a urologist with an indwelling Foley catheter after a 1 month history of urinary retention. During the preceding 6 months, he had experienced progressively worsening lower urinary tract symptoms. He had no prior history of melanoma. Digital rectal examination performed at the time of consultation revealed an enlarged prostate that was asymmetric, with the left lobe being larger than the right. The remainder of the physical examination was unremarkable. His prostate-specific antigen (PSA) was not elevated. The patient subsequently underwent cystourethroscopy and TURP. Intraoperative findings revealed prostatic lateral lobe intrusion causing obstruction. There were signs of inflammation throughout the bladder thought to be related to the indwelling Foley catheter. The TURP was uncomplicated and the patient was discharged home the following day voiding well.

The pathology from the TURP revealed nodular malignant melanoma focally infiltrating muscularis propria and prostatic stroma, Figures 1-3. Further tissue staining, including HMB45, S100 and Schmorl's stain were positive. Other tissue stains, including Monokeratin, CK7, CK20, PSA and Prostatic Acid Phosphatase, were negative. The patient underwent a staging radiologic survey. CT scan revealed multiple metastases with nodules in the peritoneum, retroperitoneum, left iliac lymph nodes and lungs, Figure 4. Bone scan revealed metastasis to the bones. Magnetic resonance imaging (MRI) of the brain revealed three small enhancing nodules that were not near the orbits and were compatible with metastatic disease

A referral was made to a medical oncologist. Physical exam revealed a soft abdomen with no masses. Cutaneous examination failed to reveal any primary melanoma sites. A biopsy of any of the metastatic sites was declined by the patient and thus, the metastatic lesions were presumed to be melanoma.

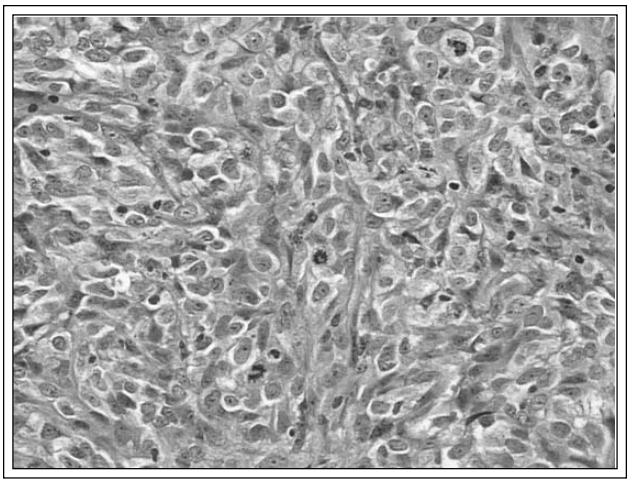

**Figure 2.** Hematoxylin-eosin stain at 200x magnification demonstrating large, pleomorphic cells with abundant mitotic activity and scattered brown pigment.

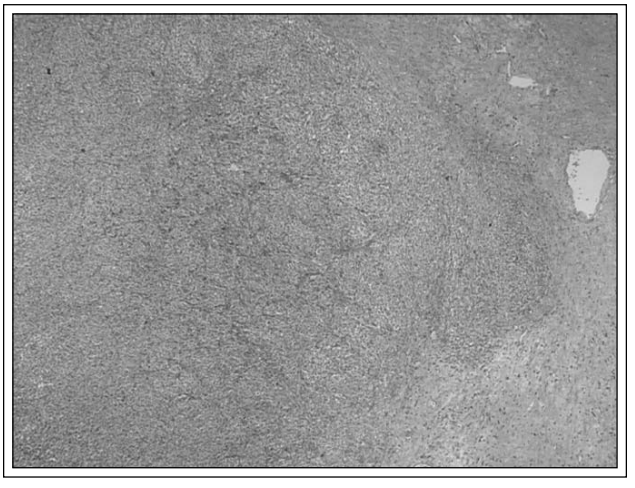

**Figure 1.** Hematoxylin-eosin stain at 20x magnification demonstrating a cellular tumor nodule within the fibromuscular stroma of prostate.

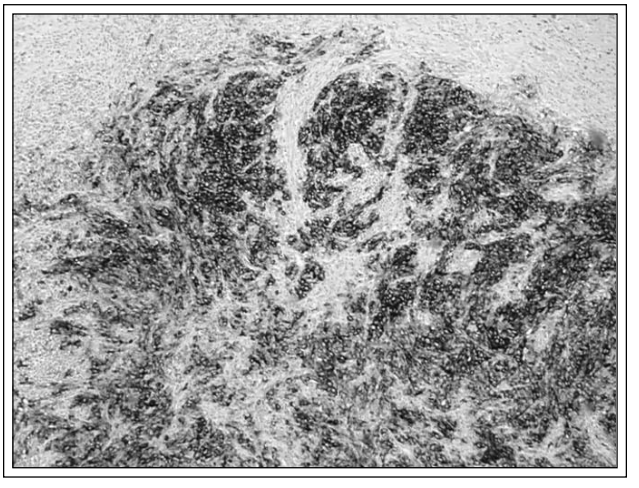

**Figure 3.** HMB45 immunoperoxidase stain at 40x magnification demonstrating cells strongly positive consistent with malignant melanoma.

**Figure 4.** CT scan of the pelvis demonstrating extraprostatic extension of the tumor.

With the absence of another site of a primary lesion, a diagnosis of primary malignant melanoma of the prostate was made. The medical oncologist offered chemotherapy and immunotherapy but these adjuvant treatment modalities were declined by the patient and thus, not employed.

Two months following the TURP, the patient noted a new nodule in the left hemiscrotum. Digital rectal exam revealed a firm mass encompassing most of the rectum. The patient underwent a repeat cystourethroscopy at that time which revealed evidence of a previous TURP and a nodular mass extending well over the trigone. There was no melanin staining of the mass. With widespread disease, further surgical treatment was not offered. The patient was referred to a radiation oncologist for palliative radiation. Due to recurrent gross hematuria, intraluminal brachytherapy was performed with some success. The patient was also referred to the palliative care service. The patient continued to decline medically and died 5 months following the TURP.

## Discussion

Melanin in the prostatic epithelium has been reported to be present in four to ten percent of normal prostate glands.[5,6] Some researchers believe that the pigment is formed by nonmalignant melanoblasts in the stroma and transferred to the prostatic epithelium.[1] However, others believe that the prostatic epithelium itself is the site of melanin production.[1] A blue nevus of the prostate is melanin that is confined to ovoid or elongated melanocytes in the prostatic stroma.[7] Melanosis of the prostate is defined as the presence of melanin containing cells in the stroma, as in a blue nevus, in addition to melanin in prostatic glandular epithelial cells.[8] Both melanosis and blue nevi are benign lesions that are not believed to be precursors to malignant melanoma.[7] Lew et al found a blue nevus in the prostate of an 80 year-old patient.[9] Staining of this nevus revealed S-100 protein positivity. This group sought cells expressing S-100 protein in the prostates of infants, young adults, and elderly patients with hyperplasia and carcinoma. They found positive staining in stromal cells, but the number diminished with age and disease. They concluded that their findings explained the rarity of blue nevi and the virtual absence of primary malignant melanoma of the prostate.[9]

Most cases of melanoma of the genitourinary tract are metastatic. This is most commonly an incidental finding upon autopsy and is rarely clinically evident which is likely due to the small size of the lesion.[1,10,11] In those secondary neoplasms of the prostate that are symptomatic, patients typically present with prostatism, hematuria or pelvic pain and almost always have widely disseminated disease.[12] Secondary neoplasms of the urogenital tract account for 1.6%-3% of genitourinary neoplasms.[13-15] In an autopsy series, malignant melanoma was the third most common metastatic cancer to the prostate after leukemia and Hodgkin disease.[11] Metastatic melanoma most often involves lymph nodes (75%), the lungs (18%-36%), and the liver (14%-20%).[10] In widespread disease, the prostate may be involved in up to 3% of autopsies.[4] In approximately 2.2% of cases of metastatic melanoma, a primary lesion cannot be found, since the primary lesion probably regressed, leaving only a subtle depigmented area.[16]

The prognosis of patients with malignant melanoma of the genitourinary tract is poor.[1,17] Overall, patients with genitourinary melanoma have a 15% 5-year survival rate with most patients dying within 2 years of diagnosis.[10,17] In addition, there is usually a delay in seeking medical attention for symptoms and patients are frequently misdiagnosed.[17] This may contribute to patients presenting at a more advanced stage. The standard treatment is radical surgery with or without chemotherapy.[1] However, in one case of a patient with primary malignant melanoma diagnosed following TURP, the patient refused a radical cystoprostatectomy and urethrectomy as well as chemotherapy. At 7 years follow-up, the patient continued to do well and was tumor-free.[18] This case, however, was of a man that had prostate-confined disease.

It is our impression that the case presented in this report represents an example of primary malignant melanoma of the prostate. To the best of our knowledge, this is only the third reported case of primary malignant melanoma of the prostate.[2] However, we recognize that infrequently, the primary lesion cannot be determined and thus, the possibility of another primary site remains present. □

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