JOURNAL OF
Endoluminal Endourology

Case Report
DOI:10.22374/jeleu.v5.1.136

BLADDER MELANOSIS: A RARE CYSTOSCOPIC FINDING

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Abstract

This case report describes a rare cystoscopic finding in an octogenarian, presenting initially with nonspecific lower urinary tract symptoms. Physical examination did not reveal any abnormal skin or mucoepidermoid pigmentation. Routine ultrasound identified cystic changes in the bladder prompting cystoscopic investigation. Flexible cystoscopy identified melanin deposits within the bladder mucosa, and biopsy subsequently confirmed a diagnosis of bladder melanosis. The authors of this report wish to add to the available literature on this extremely rare finding in the hope a more robust evidence base would allow a protocol to be established for follow-up. The ultrasound findings reported in this study have not been previously reported and may benefit future guidelines on diagnosis.

Keywords: *Flexible cystoscopy, bladder melanosis, lower urinary tract symptoms, ultrasound, histopathology*

INTRODUCTION

Bladder melanosis is a rare, benign condition caused by deposition of melanin within urothelial cells, not extending deeper than the lamina propria.[1] It presents with a nonspecific symptomatology and is identified during flexible cystoscopy. We present a case of bladder melanosis identified due to ultrasound abnormalities during the work up of an 81-year-old man with bladder outlet obstruction symptoms.

CASE PRESENTATION

An 81-year-old man was referred to our urology service with worsening bladder outlet obstruction symptoms, specifically poor flow, discomfort with micturition, a feeling of incomplete emptying, and nocturia seven times per night. He had no history of urinary infections or hematuria. His background history was significant for hyperlipidemia, hypertension, and mitral valve regurgitation. He had a normal body mass index. Digital rectal exam elicited a grossly enlarged prostate estimated at >100 cc, with no features concerning for malignancy. There were no pigmentations evident on the skin or mucocutaneous surfaces. He was referred for a routine ultrasound of his urinary tract.

Baseline blood tests including full blood count and renal profile were unremarkable. His prostate-specific antigen was within the normal age adjusted range at 5.4 ng/mL. An ultrasound demonstrated a trabeculated bladder with some debris, as

well as cystic changes that were indeterminate, and a cystoscopy was recommended (Figure 1). The prostate was enlarged at 133 cc.

Flexible cystoscopy was performed identifying 200 mL of urine retained in his bladder, and significant sediment was washed out. The mucosa contained dark deposits consistent with melanin deposition (Figure 2). A biopsy was taken to confirm the diagnosis and to rule out any concurrent malignancy. There were significant trabeculations with large diverticula consistent with the ultrasound findings.

Histopathological analysis of the specimen confirmed a diagnosis of bladder melanosis seen as a prominent black pigment predominantly within the subepithelial lamina propria and focally within

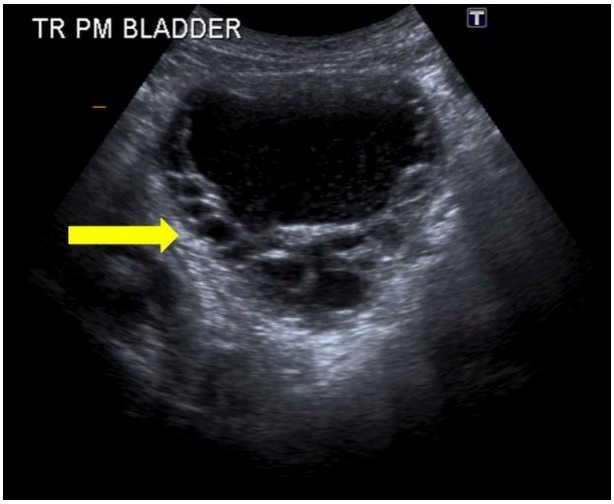

FIGURE 1. Ultrasound bladder. Arrow highlighting cystic changes.

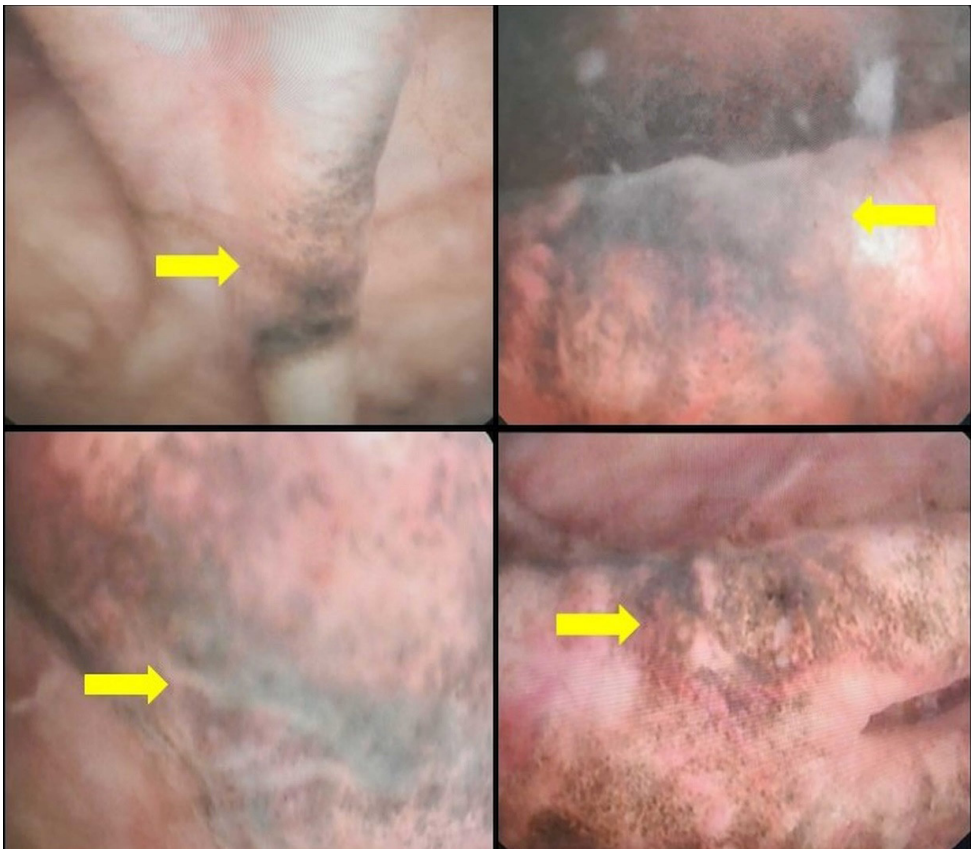

FIGURE 2. Flexible cystoscopy images. Arrow highlighting hyperpigmented areas of bladder mucosa.

the surface urothelium, supported with the Masson–Fontana stain. The urothelium also demonstrated focal active inflammation and reactive epithelial changes. There were no excess melanocytes, interpretation of which was supported by Sox-10 immunochemistry (Figure 3). There was no evidence of malignancy.

Following commencement of tamsulosin 0.4 mg and dutasteride 0.5 mg combination therapy, the patient's symptoms resolved. Follow-up–flexible cystoscopy has been arranged for 1 year to ensure no malignant transformation has occurred.

DISCUSSION

Bladder melanosis, characterized by abnormal melanin deposits within bladder urothelium, is a very rare finding.[1] Melanosis is more commonly seen on the skin, oral cavity, genitalia, and conjunctiva.[1] It has a male predisposition, and most patients are over the age of 40 years, with a range of 43–86 years.[1,2] The earliest report in the literature of bladder melanosis is from 1986 and reports on two male patients with pigmentation of the prostatic and bladder urothelium due to melanin.[3] It remains extremely rare with less than 25 cases reported and

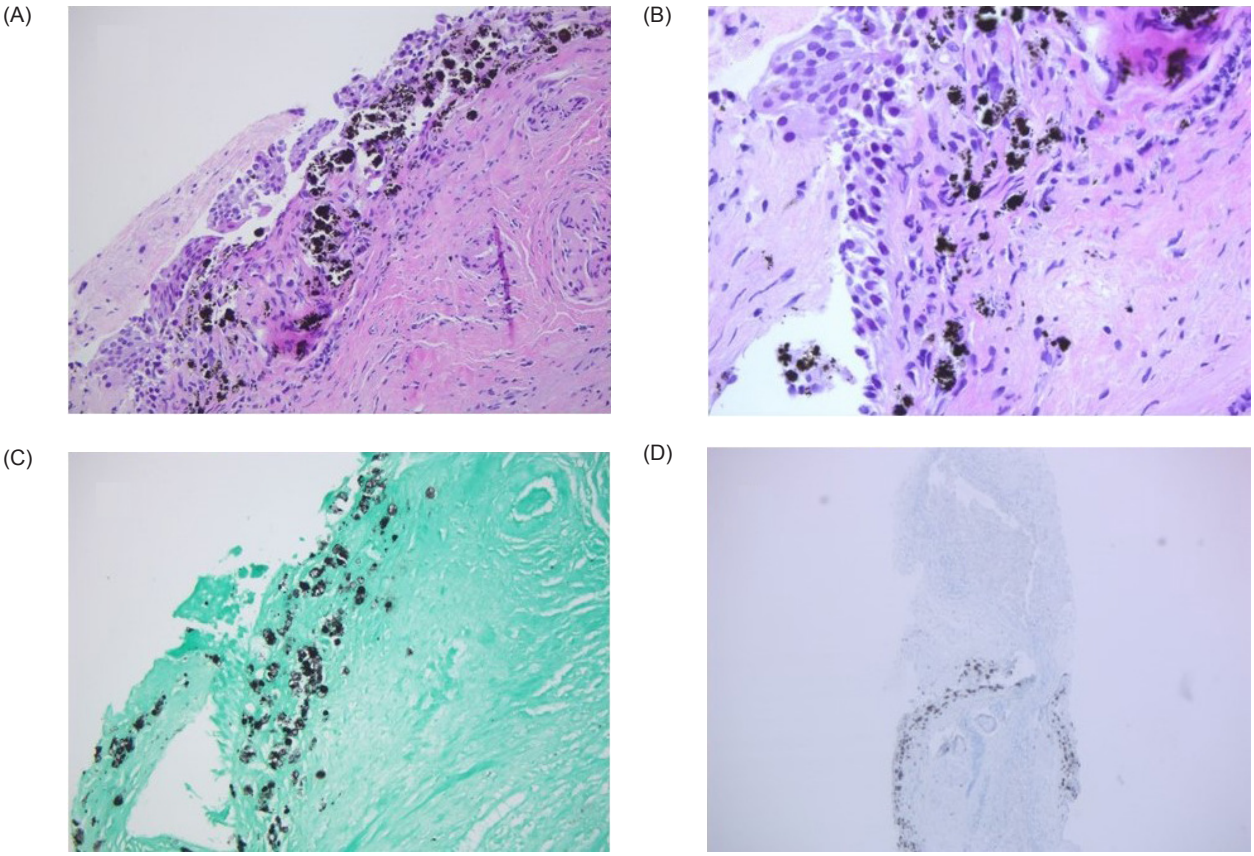

FIGURE 3. (A) Hematoxylin and eosin (H&E) stain x200 magnification: Bladder mucosa with abundant brownish or black pigment diffusely deposited predominantly in the superficial lamina propria and focally in the surface urothelium. Note the paucity of associated inflammation. (B) H&E x400 magnification: Bladder mucosa with brownish or black pigment predominantly deposited in macrophages in the superficial lamina propria, also present in the surface urothelium. (C) The pigment stains black with a Masson–Fontana stain supportive of melanin pigment and was negative with a Perl's stain for iron (not shown). (D) Immunohistochemistry for Sox-10 was negative, ruling out a melanocyte proliferation.

is widely considered to be a benign entity due to its histological features.[4] It is likely that many cases are unreported due to its benign nature, however, it is important that pathologists are aware of this rare finding to avoid incorrectly diagnosing a patient with malignant melanoma.[5] The underlying etiology of bladder melanosis has not yet been established, unlike melanosis seen in other areas of the body.[2] It has been suggested that due to its rarity, all cases identified in the course of clinical practice should have clinical photography taken and a report should be published with the histological findings in order to build on the knowledge available.[6]

The main differential diagnosis primary malignant melanoma of the urinary bladder, is extremely rare with less than 50 cases reported, accounting for just 0.2% of all melanoma.[7] Within the urinary tract, the external genitalia are the most common sites for primary malignant melanoma, with the internal genitourinary tract (prostate, bladder, ureter) being more commonly affected by metastatic disease.[8,9] There is no difference in incidence between males and females.[10] Melanoma of the bladder most frequently presents with visible hematuria.[11] In localized disease, treatment is generally in the form of cystectomy; however, in metastatic disease, recombinant interleukin 2 (IL-2) has been used.[12] The response rate to immunotherapy is poor with as few as 6% having a complete response.[13] Mucosal melanoma has an estimated 5-year overall survival as low as 34%, and very few patients with melanoma of the bladder survive beyond 3 years.[14,15]

The clinical presentation of bladder melanosis varies from more benign symptoms of bladder overactivity or cystitis to more concerning symptoms such as hematuria.[5] Due to the lack of published cases describing patients' symptoms, it is not clear whether any of these symptoms are caused by bladder melanosis or whether bladder melanosis is itself asymptomatic and is found incidentally in patients presenting with nonspecific symptoms. On histopathological analysis, the tissue is typically colored due to hemosiderin, lipofuscin, and melanin.[16] In some cases, patients can have a similar discoloration without the presence of melanin, referred to as "pseudomelanosis" or "lipofuscinosis".[17]

Although melanosis itself is benign, there have been cases reported where patients have concurrent urothelial carcinoma of the bladder.[18] A cause or effect has not been established, and it is not known whether bladder melanosis has any influence on developing urothelial carcinoma.[19] A biopsy should always be obtained when bladder melanosis is suspected as, although also rare, the clinician must rule out the diagnosis of malignant melanoma of the bladder.[19] There has been one reported case in which a patient presented for cystoscopic investigation due to recurrent urinary tract infections where bladder melanosis was identified and confirmed with biopsy. The patient subsequently developed hematuria 1 year later and was then diagnosed with high-grade transitional cell carcinoma of the bladder.[20] Although this is just a single case, it does raise the question as to whether these patients should be followed endoscopically at an interval period. On the contrary, Mera et al. reported on a patient followed endoscopically 1 year after his diagnosis of bladder melanosis who had complete resolution of the melanosis without any specific treatment.[21] It has been suggested that these patients undergo annual surveillance cystoscopy due to the level of uncertainty that surrounds this diagnosis.[22,23] The longest reported follow-up in the literature is 10 years during which time the patient had repeated cystoscopy and biopsy, however, this patient subsequently proceeded to benign cystectomy due to refractory lower urinary tract symptoms.[24]

The authors of this report wish to add to the available literature on this extremely rare finding in the hope a more robust evidence base would allow a protocol to be established for follow-up. The ultrasound findings reported in this study have not been previously reported and may benefit future guidelines on diagnosis.

CONCLUSION

Bladder melanosis is a rare cystoscopic finding and should always be biopsied to out rule malignant

neoplasms such as urothelial carcinoma and primary or metastatic malignant melanoma. A complete history of the patient's symptoms should be recorded, cases should be reported to identify any trends and to identify which patients should undergo cystoscopic surveillance. Further information is required on whether these patients warrant any follow-up, however annual cystoscopy may be helpful in high-risk patients.

DECLARATIONS

Consent

Patient authorization with signed consent form.

Conflict of interest statement

No conflicts of interest to declare.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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