

## A Case of Bladder Melanosis Associated with Recurrent Urinary Tract Infections

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### ABSTRACT

Bladder melanosis is a very rare clinical entity that has reportedly been associated with a wide variety of urinary symptoms. Reports also exist of an association with bladder malignancy. We describe a case with a 58-year-old man under urological investigation following 2 urinary tract infections. Several flat, blackened areas within the bladder were observed at cystoscopy, which histology revealed was due to increased melanin deposits within bladder urothelial cells; i.e., melanosis. This finding is of uncertain significance, and regular cystoscopic follow-up was thought to be prudent. At 3 months, appearances were unchanged; however, at 6 months, the bladder's appearance was entirely normal with resolved changes of melanosis.

### INTRODUCTION

Bladder melanosis is a rare clinical entity with only 10 cases previously described in literature. Here we discuss the interesting case of a 58-year-old man who was found to have this condition whilst being investigated at our center for recurrent urinary tract infection (UTI). Further evidence is desirable in light of the disparate nature of the cases reported of this condition, and the possible associations of malignancy suggested by some. This case report adds to the body of literature on this condition, and includes descriptions of the macroscopic and histological features of the lesions found, as well as clinical features of the case.

### CASE PRESENTATION

The patient is a 58-year-old gentleman who had previously lived in Africa, was an ex-smoker, and presented with a UTI. This was a proven coliform infection that followed an athletic event where he swam in a British lake and had been treated by his GP with co-amoxiclav. He had also noticed recent slowing in his urinary flow. He had suffered from previous UTI 3 years prior to this, which had been treated and not investigated further. He was taking no other medication, and he had no other significant past medical history. Routine blood tests, including PSA, were normal.

**KEYWORDS:** Bladder melanosis; Melanosis vesica

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Figure 1. Biopsy of bladder mucosa showing transitional cells containing melanin pigmentation cytoplasm.

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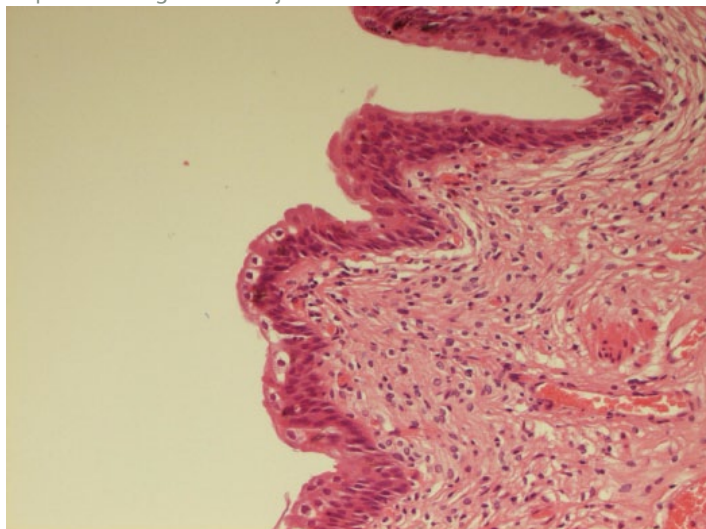
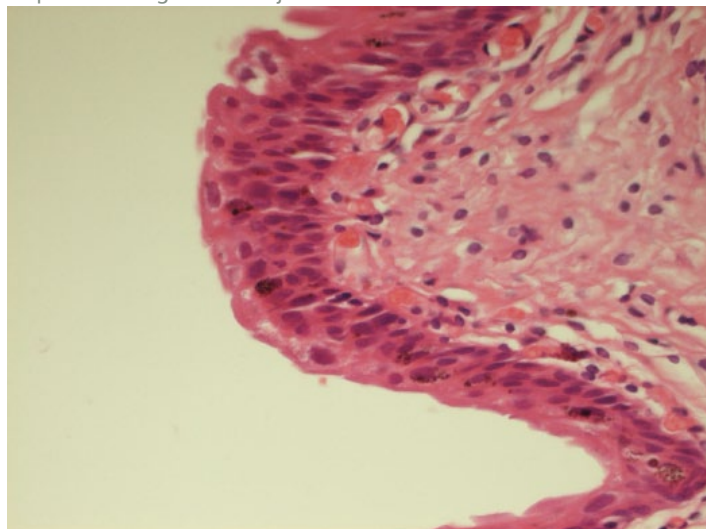


Figure 2. Biopsy of bladder mucosa showing transitional cells containing melanin pigmentation cytoplasm.

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On ultrasound, bladder emptying appeared satisfactory and upper tracts were normal, but he was noted to have a large anteriorly placed bladder diverticulum. At cystoscopy, this diverticulum did not show any suspicious features; however, several flat blackened areas within the bladder were observed, along with one raised blackened area and a small lesion on the urethra thought to be a benign polyp.

Biopsy of the bladder lesions revealed dark brown granules within the cytoplasm of the urothelial cells (Figures 1 and 2). Possible causes of this appearance are hemosiderin, lipofuscin, and melanin. A Perl's stain is used to demonstrate iron, which was negative in this case. The Masson-Fontana stain for melanin was positive. The cells containing the melanin did not show the morphological features of melanocytes; therefore, this was not thought to be a melanocytic lesion, but simply melanin pigment present where it is not normally seen; i.e., simple melanosis. Since bladder melanosis is a condition of uncertain significance, follow-up with repeat cystoscopy was arranged for 3 months after the initial cystoscopy and biopsy. This revealed similar appearances as before with a few small areas of melanosis. Pictures of the lesions were obtained at this time. Interestingly, at the 6-month check cystoscopy, the lesions had resolved completely on macroscopic examination.

## DISCUSSION

Melanosis is a form of hyperpigmentation associated with abnormal increased melanin deposition in cells. It is most commonly seen in the skin and oral mucosa, but can occur in any organ, including the urinary bladder. A review of the literature on this condition was carried out. A literature search using PubMed found 11 articles [1, 3-5, 7-9, 11-14]. Melanosis of the urinary bladder (or *melanosis vesicae*) is an extremely rare entity with only 12 cases reported in scientific literature since 1986 when it was first described [1]. The first description of urinary bladder melanosis was that of 2 cases by Alroy et al. in 1986 who identified multifocal dark discoloration of the bladder and prostatic urothelium as melanin pigmentation, and characterized the light microscopic, electron microscopic, and histochemical features of this condition. Typical findings on cystoscopy are multiple foci of black or dark brown discoloration, which may be difficult to differentiate macroscopically from malignant melanoma and is the most common primary pigmented lesion of the urinary tract [6]. This appearance is also very similar to benign deposits of lipofuscin and hemosiderin (reported in normal aging), ciprofloxacin treatment of interstitial cystitis, and phenacetin abuse [7, 15, 16], and iron overload, respectively [10], and can present with

irritative symptoms. Wieringa et al. [17] also reported a case of *pseudomelanosis vesica* with deposits of “melanin-like pigment” within the urothelium.

In the years since Alroy et al., a few heterogeneous case reports of bladder melanosis have been published, describing patients ranging in age from 43 to 86 years and of both sexes. A wide range of associated urinary symptoms have been described in the reported cases [3-5, 9, 12, 14], including frank hematuria [9], urinary incontinence [3, 14], and recurrent UTI [5], as was present in this case. These have ranged from mild to severe and debilitating to the degree that cystoprostatectomy and neobladder formation has been carried out [4]. Obviously, this does not preclude the presence of bladder melanosis in entirely asymptomatic individuals. Since they are unlikely to be investigated cystoscopically in the absence of symptoms, this would never be discovered.

Bladder melanosis is thought to be benign; however, reports exist of an association with primary malignant melanoma [2] and transitional cell carcinoma [5] of the urinary bladder. In the case of transitional cell carcinoma (TCC) described by Sanborn et al., this condition was preceded by melanosis of the bladder, observed cystoscopically a year before first presentation of the TCC. However, the authors feel that it is impossible to say whether there is a link between the 2 conditions. Additionally, Chong et al. [14] report urine cytology showing atypical transitional cells with intracytoplasmic brownish-black pigment in a patient who had bladder melanosis on cystoscopy but no sign of malignancy. They suggest that this may imply this condition is a pre-malignant lesion. There is currently little evidence for or against this hypothesis; however, it may be worth mentioning that in the case with the longest reported follow-up, Engelhardt et al. [4], there was no sign of developing malignancy during the 10 years of close monitoring. Our case report also provides reassuring evidence that bladder melanosis may resolve spontaneously without sequelae. To our knowledge, no previous case reports have described complete resolution in this manner.

It therefore seems that the significance of bladder melanosis is uncertain. The spectrum of association ranges from mild and benign symptoms to aggressive malignancy. In view of the poorly established implications of the lesions, it would be sensible to continue cystoscopic follow-up of the gentleman whose case is reported here. It is hoped that the case reported

here will add to the body of literature regarding this condition and contribute to future knowledge of its significance.

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