Urology Case Reports 33 (2020) 101283

Contents lists available at ScienceDirect

Urology Case Reports

journal homepage: http://www.elsevier.com/locate/eucr

Functional medicine

Melanosis of the bladder: A rare diagnosis

Diana M. Lopategui [a], Roger C. Griffith [b], Janice Santos Cortes [c,*]

[a] Urology Department, Mount Sinai Medical Center, Miami Beach, FL, USA
[b] Department of Pathology, Brown University, Lifespan Health System, Providence, RI, USA
[c] Urology Department, Brown University, Lifespan Health System, Providence, RI, USA

ARTICLE INFO

Keywords:
Bladder melanosis
Cystoscopy
Overactive bladder

ABSTRACT

Melanosis of the bladder is characterized by dark, velvety bladder mucosa due to melanin deposition. Less than 25 cases have been reported. We present a 45-year-old male undergoing work up for obstructive and storage irritative lower urinary tract symptoms, found to have diffuse bladder melanosis on cystoscopy with bladder biopsy, and detrusor overactivity on urodynamic study. Although bladder melanosis has been found before in conjunction with storage voiding symptoms, this is the first report to our knowledge of an association with overactive bladder with urodynamic and histologic confirmation.

Introduction

Melanosis of the bladder is an uncommon condition characterized by a dark, velvety aspect of the bladder epithelium due to deposition of melanin within the vesicle urothelium and/or lamina propia in absence of melanocytes. With less than 25 cases reported in the literature, its clinical significance is currently uncertain.[1] We present a case where bladder melanosis was encountered during the work up of an unusual case of overactive bladder (OAB) in a 43-year-old man.

Case presentation

A 43-year-old male was referred to our clinic for evaluation of urinary tract symptoms, including both obstructive and storage irritative: weak urinary stream and urge incontinence. The patient endorsed symptoms developed after an episode of meningoencephalitis seven years prior. Given this prior history and the subject's young age; decision was made to perform a complete evaluation of bladder function including a urodynamic study (UDS), and a cystoscopy. Cystoscopy showed no evidence of obstruction, but the encountered mucosa had an unusual diffuse black, velvety appearance (Fig. 1). Bladder wall biopsies were taken from the area. UDS demonstrated detrusor overactivity, equivocal parameters for bladder outlet obstruction and normal bladder detrusor contractility.

Initial pathology report of the bladder biopsy described a 5 x 3 × 3 mm fragment of tan tissue that consisted of urothelium, lamina propia and muscular propia. The urothelial cells (Fig. 2) contained intracytoplasmic golden brown granular pigment focally that focally involved macrophages of the superficial lamina propria, which was congested with focal hemorrhage and focal chronic inflammation. Differential diagnosis of the pigment includes hemofuchsin, hemosiderin and melanin. Histochemistry studies were directed by the cystoscopic findings and consisted melanin (Fontana-Mason) and iron (Prussian blue) stains that demonstrated that the pigment represented melanin deposition and not hemosiderin (Fig. 2) - in this circumstance, diagnostic of melanosis of the urinary bladder or urinary melanosis, a benign but very rare condition of unknown etiology with melanosis. Evidence of malignancy was not present.

Patient was treated according to symptoms with alfa-blockers and anticholinergics. His obstructive symptoms (hesitancy and weak urinary stream) resolved on tamsulosin, but his storage symptoms of frequency and urge incontinence persisted. He failed trials of oxybutynin, tolterodine and trospium and first line of treatments for OAB.

Patient denies any exposure to medications, drugs, laxatives or chemotherapy. He endorses no other systemic symptoms. Uptodate he is pending further management treatment upon follow up.

Discussion

Melanosis is defined as an "excessive pigmentation" of any part of the body due to altered melanin production, usually in reference to skin hyperpigmentation in a variety of conditions. In the bladder, melanin

Abbreviations: urodynamic study, UDS; overactive bladder, OAB.

* Corresponding author. 4302 Alton Road suite 540, Miami Beach, FL, 33137, USA.
E-mail addresses: dlopategui@gmail.com (D.M. Lopategui), rcgriffith@lifespan.org (R.C. Griffith), janice.santoscortes@msmc.com (J. Santos Cortes).

https://doi.org/10.1016/j.eucr.2020.101283
Received 21 April 2020; Received in revised form 27 April 2020; Accepted 29 April 2020
Available online 27 May 2020

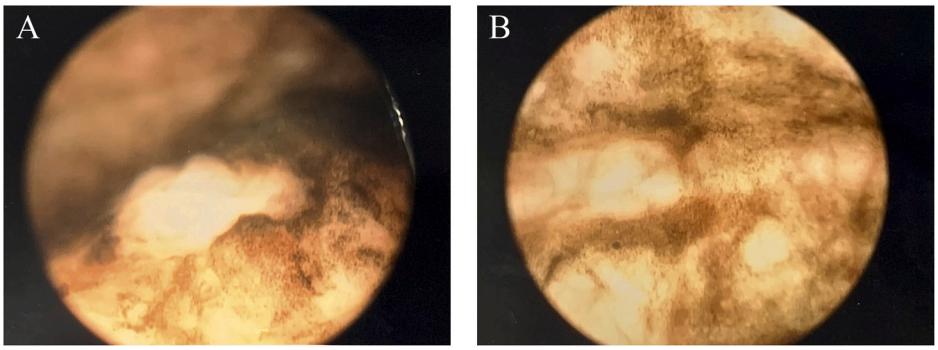

Fig. 1. Left ureteral orifice on cystoscopy (panel A) and bladder mucosa (panel B).

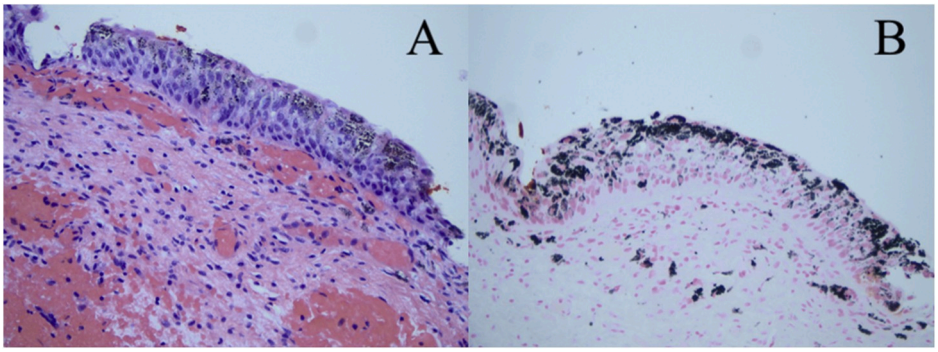

Fig. 2. Bladder biopsy H&E, 200X (panel A): golden brown granular pigment is present mostly in the superficial urothelial but also in deeper cells and in macrophages in the lamina propria, which is congested with focal hemorrhage. Bladder biopsy Fontana-Masson, 200X, (panel B): the pigment is stained black by the Fontana-Mason stain in the urothelial and the lamina propria, consistent with melanin. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

deposition is named bladder melanosis or, alternatively, melanosis vesicae. It constitutes an extremely rare entity, only described in less than 25 reports in the literature currently available. Bladder melanosis is considered a benign, incidental finding with no known connection to malignancy or benign bladder conditions.[1] However, clinical significance cannot be fully determined given the paucity of cases reported and their lack of follow up. Melanosis is otherwise found more often in reports from colonoscopies. Melanosis coli has been associated with chronic laxative use.[2]

Bladder melanosis has been documented in patients of ages between 43 and 90 with no gender preference, and in association with a number of different symptoms including dysuria, urinary frequency, hematuria, incontinence and retention. It has also been reported preceding or synchronous with urothelial carcinoma and with bladder melanoma; this last condition constituting the most important differential diagnosis from the pathological analysis standpoint to determine treatment.[1] This present case constitutes the first report, to our knowledge, of bladder melanosis in conjunction with UDS-demonstrated diagnosis of detrusor overactivity. Characteristic histology findings of neurogenic OAB such as congestion and chronic inflammation[3] were present in this patient's bladder biopsy in addition to the golden brown granular deposits of melanin, present mostly in the superficial urothelium but also in deeper cells and in macrophages in the lamina propria (Fig. 2). Needless to say, one case report is insufficient to show any association between melanosis and OAB. But it certainly does make it a possibility, and may potentially constitute the first evidence towards the elucidation of the pathogenic pathway leading to bladder melanosis, perhaps entailing inflammatory and immunologic mechanisms certainly involved in the changes seen in OAB.

Conclusion

Bladder melanosis is a benign, extremely rare condition, characterized by melanin deposits that give the bladder mucosa a dark, velvety appearance. With less than 25 cases reported in the literature, its pathophysiology, as well as clinical significance, are uncertain to this date. It has been documented in a wide range of patients' age, as well as with a variety of symptoms including dysuria, urinary frequency and incontinence. We present the first report of UDS-proven detrusor overactivity in conjunction with bladder melanosis, in a young man studied for neurogenic OAB. Although one case is far from enough to establish an association between these entities, it may represent the first evidence of an inflammatory mechanism leading to bladder melanosis.

Funding

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

Declaration of competing interest

We declare no conflict of interest.

References

1. Yau SE, Singer EJ, Sun Y, Johnson ME. Bladder melanosis with concurrent urothelial carcinoma. *Urol Case Rep*. 2017 Nov;15:30–32.
2. Liu ZH, Foo DCC, Law WL, Chan FSY, Fan JKM, Peng JS. Melanosis coli: harmless pigmentation? A case-control retrospective study of 657 cases. *PloS One*. 2017. Oct 31;(10):12.
3. Compérat E, Reitz A, Delcourt A, Capron F, Denys P, Chartier-Kastler E. Histologic features in the urinary bladder wall affected from neurogenic overactivity–a comparison of inflammation, oedema and fibrosis with and without injection of botulinum toxin type A. *Eur Urol*. 2006 Nov;50(5):1058–1064.