

Detecting Invisible Bladder Cancers With Blue Light Cystoscopy



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A 90-year old man with no significant past medical history presented to urology clinic complaining of gross hematuria, urinary frequency, and dysuria. Previous urine cytology was atypical but 2 white-light cystoscopies failed to show any lesions. The patient was taken for intraoperative blue light cystoscopy, which revealed multiple lesions that were then resected. Pathology revealed high grade urothelial carcinoma with lamina propria invasion and the patient was managed successfully with Bacille Calmette Guerin therapy. This case highlights an important role for blue light cystoscopy in diagnosing patients with high suspicion for malignancy but negative white light cystoscopy. UROLOGY 139: e8–e9, 2020. © 2020 Elsevier Inc.

A 90-year-old otherwise healthy male was referred to the urology clinic because of persistent episodes of gross hematuria, urinary frequency every 45 minutes and dysuria. Prior white light cystoscopies were twice negative and urine cytology was atypical. The patient was taken to the operating room where intravesi-

cal hexa-aminolevulinate, a heme precursor which causes preferential accumulation of protoporphyrin IX and other photoactive porphyrins in neoplastic cells, was instilled one hour prior to cystoscopy. Blue light cystoscopy, a photodynamic diagnostic tool that excites photoactive porphyrins to fluoresce red, revealed multiple lesions (Fig. 1) that were invisible under white light (Fig. 2). Complete transurethral resection of bladder lesions was performed, and pathology revealed high grade, non-invasive, papillary urothelial carcinoma (Fig. 3A-C). After further workup, the patient was then started on intravesical therapy with Bacille Calmette Guerin and post-treatment cystoscopy and blue-light cytology were free of recurrent disease. Blue light cystoscopy is a valuable tool in the detection of bladder tumors, particularly when clinical

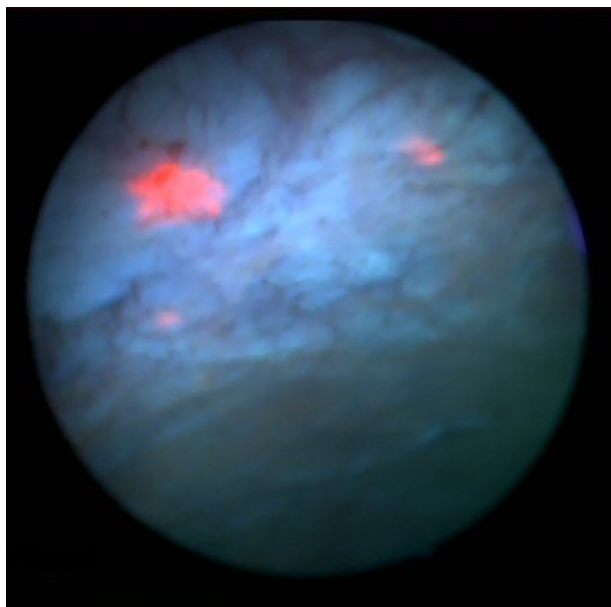


Figure 1. Blue light cystoscopy in the same bladder position as Figure 2 positive for multiple bladder lesions. Color version available online.

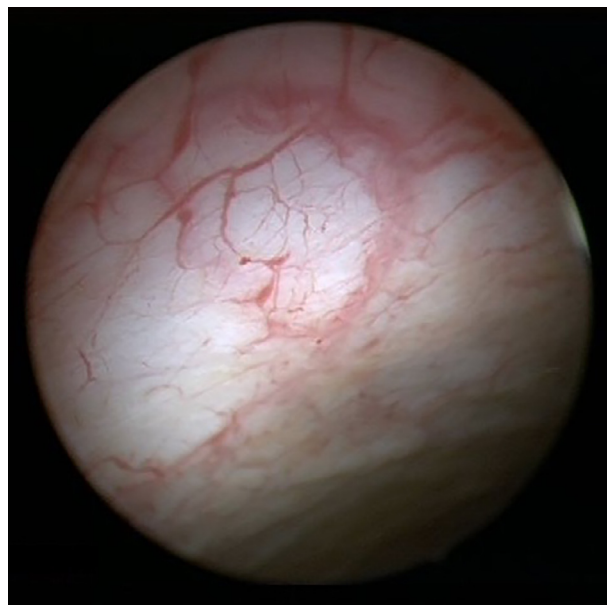


Figure 2. White light cystoscopy negative for bladder lesions.

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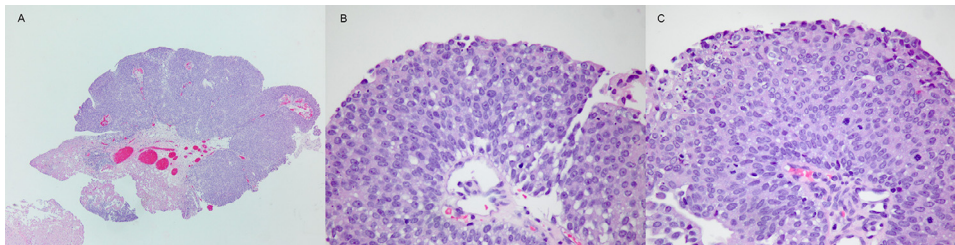


Figure 3. (A) Low power hematoxylin and eosin stained section showing thickened urothelium with papillary projections. The basal aspect of the urothelium is rounded with an intact basement membrane. There is no lamina propria invasion. (B) Hematoxylin and eosin stained section at 400x magnification showing highly atypical urothelial cells with moderate nuclear to cytoplasmic ratios, moderate variation in shape and size of the nuclei, and prominent single to multiple nucleoli. There is loss of the usual maturation and polarization. There are numerous apoptotic bodies. (C) Hematoxylin and eosin stained section at 400x magnification showing numerous mitosis at varying levels of the urothelium.

suspicion remains high on the basis of concerning symptoms, suspicious urine cytology, or prior history of high grade urothelial carcinoma.

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