Inflammation and Infection

Lower Urinary Tract Symptoms Secondary to Mass Lesion of the Brain: A Case Report and Review of the Literature

Leslie M. Okorji*, Daniel T. Oberlin
Northwestern University Feinberg School of Medicine, Department of Urology, USA

Abstract

Lower urinary tract symptoms (LUTS) secondary to neurologic disorders are well-established, but intracranial mass lesions are rare causes of LUTS with very few case reports described in the literature. We present a 28-year old man with urinary urgency, frequency and incontinence which were revealed to be secondary to a large thrombosed intracranial aneurysm. Any unusual clinical presentations of LUTS such as new onset neurologic symptoms need to be explored to rule out potentially treatable causes.

Introduction

Lower urinary tract symptoms (LUTS) represents a spectrum of urinary complaints divided into overactive bladder symptoms such as frequency and urgency, and outlet obstruction symptoms such as weak stream and difficulty voiding. Neurologic diseases such as diabetes mellitus are well-known causes of LUTS, however LUTS secondary to an intracranial mass lesion has been very rarely described in the literature. Here we describe a case of urinary urgency, frequency and incontinence secondary to a large thrombosed intracranial aneurysm of the middle cerebral artery that was resolved upon ligation and removal of the implicated mass.

Presentation of case

A 28-year old Asian male with no significant medical history presented from his primary care physician to the urology clinic with 6-months of progressively worsening intermittent urinary incontinence, frequency and urgency. He admitted that his symptoms were bothersome and caused him a lot of embarrassment. He denied fever, dysuria, hematuria, change in urinary stream or increased nocturia. He denies any family history of prostate cancer, history of multiple sclerosis or other neurologic disorders. On initial examination, the patient was a well appearing young man in no distress. Vital signs were within normal limits. Physical exam was significant for a soft, non-tender, non-distended abdomen, and a normal genitourinary, rectal and neurologic exam. Uroflowmetry revealed a maximum flow rate was 25 mL/sec (normal greater than 15 mL/sec), and bladder ultrasonography revealed a urinary residual volume of 0 cc.

His lab results were unremarkable; his complete blood count and basic metabolic panel were within normal limits, HbA1c was 5.9, and urinalysis and urine culture were negative for infection. The patient was started on an anti-cholinergic (oxybutynin 5 mg twice daily) and returned for 1-month follow-up with his symptoms stable but unimproved even after switching to a different anti-cholinergic (tolterodine tartrate 4 mg daily). He subsequently underwent a computer tomography scan of the abdomen and pelvis with and without contrast to assess for nephrolithiasis or mass lesions of the urothelium which showed no upper tract or bladder stones, no hydronephrosis, and no other abnormalities of the bladder. The patient continued to be very bothered by his symptoms, and he was scheduled for urodynamics and a cystoscopy prior to a 2-month follow-up.

The patient called 1-week prior to his urodynamics study to cancel complaining of worsening headaches, nausea and difficulty concentrating along with persistent urinary complaints. Neurology was consulted and suggested a magnetic resonance imaging (MRI) of the head and a subsequent neurology clinic visit. His MRI results returned 2-weeks after his new symptoms started, and showed a 5.7 cm thrombosed giant aneurysmal sac of the left middle cerebral artery (MCA) with compression of the frontal and temporal lobe (Fig. 1). The patient was subsequently admitted to neurology.

* Corresponding author. Tarry 16-703, 303 East Chicago Avenue, Chicago, Illinois 60611, USA. Tel.: +1 312 503 3238; fax: +1 312 908 7275.
E-mail address: leslie.okorji@northwestern.edu (L.M. Okorji).

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neurosurgery was consulted, and the patient underwent a left pterional craniotomy, Hunterian ligation of complex left MCA aneurysm, and a craniectomy. His postoperative course was complicated by recurrent seizures and epileptiform activity which resolved two weeks post-operatively. At 2-months follow-up his urinary symptoms of frequency and urgency resolved completely.

Discussion

Lower urinary tract symptoms (LUTS) represent a very common problem in men. Causes of LUTS include neurologic, anatomic, inflammatory, infectious, psychogenic and idiopathic etiologies. Intracranial mass lesions are an infrequent but well-established cause of LUTS. Andrew and Nathan first described the syndrome of urinary frequency, urgency and urinary incontinence in association with frontal mass lesions in 1964, and implicated the anteromedial portion of the frontal lobe including the anterior cingulate gyrus. Maurice-Williams found in a subsequent case series that 7 out of 50 consecutive patients with frontal lobe tumors had associated LUTS. There have been a few other isolated case reports of this syndrome in the literature.

The workup for LUTS includes a relevant medical history, symptom scoring with tools such as I-PSS, focused physical exam including DRE, urinalysis, frequency volume charts, and discussion regarding PSA testing in men over 40. Standard treatment for uncomplicated LUTS includes behavior modification, lifestyle changes, bladder training, and medical management. Our patient underwent a complete workup which was unrevealing, and was given dietary and lifestyle counseling and started on anticholinergic treatment for presumed OAB.

Persistent bothersome symptoms should be assessed with a specialized management which includes detailed LUTS questionnaires, urodynamic studies and post-void residual urine. Imaging is not routinely recommended except for cases with suspicion of upper urinary tract involvement or in anticipation of invasive therapy to relieve obstruction caused by the prostate. For LUTS patients with neurogenic symptoms, urethrocystoscopy + cytology is also recommended to detect urethral strictures, stones and bladder tumors which can mimic neurogenic LUTS. There is no evidence to support routine brain or spinal cord imaging in these patients unless clinically indicated as in our patient with new onset headache, vomiting and increased urinary symptoms.

Conclusion

Frontal mass lesions of the brain are an uncommon cause of LUTS. If initial workup and management of patients presenting with LUTS are unrevealing, unusual clinical presentations such as neurologic symptoms should be explored to rule out rare and potentially treatable causes of LUTS. We described a case of urinary urgency, frequency and incontinence secondary to a large thrombosed intracranial aneurysm that was resolved upon resection of the implicated mass.

Conflict of interest

The authors declare no conflict of interest.

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