



New onset urinary incontinence in a pediatric patient with transverse myelitis

Eitan Glucksman^{a,*}, Carlos Medina^a, John Phillips^a, Richard Schlussek^a, Suzanne Glucksman^b

^a Department of Urology, Westchester Medical Center, Valhalla, NY, USA

^b Pediatric Urology Associates, Brooklyn, NY, USA

ARTICLE INFO

Keywords:

Transverse myelitis
Urinary incontinence
Pediatric transverse myelitis
Urologic transverse myelitis

ABSTRACT

Transverse myelitis is an inflammatory disorder of the spinal cord that can present with a wide array of lower urinary tract symptoms including urinary retention, frequency, urgency, and urge incontinence.

We report a case of a 15 year old male with new onset urinary incontinence who initially presented to the urologist and was subsequently diagnosed with transverse myelitis.

1. Introduction

Acute transverse myelitis (TM) is a focal inflammatory disorder involving the spinal cord resulting in motor, sensory, and autonomic dysfunction distal to the lesion(s). The presentation can vary depending on the spinal cord segment that is affected.

Sensory symptoms usually present as paresthesias ascending from the feet.

Motor symptoms often include weakness that preferentially affects the flexors of the legs and the extensors of the arms.

Autonomic involvement can frequently cause bowel and bladder dysfunction or temperature dysregulation¹

TM has an estimated incidence of 1.34–4.6 per million. There does not appear to be a familial, ethnic, or geographic predisposition to TM¹

Although TM is more commonly diagnosed in adults, about 20% of cases occur in children.²

We report a case of acute transverse myelitis in a 15 year old patient initially diagnosed by the urologic work up of lower urinary tract symptoms (LUTS).

2. Case presentation

A 15 year old male with a past medical history of anxiety presented to the pediatric urologist with new onset urinary incontinence for 10 days.

The incontinence was so severe and unpredictable that the patient required the use of diapers.

He complained of urinary frequency, urge incontinence, and feelings of incomplete emptying. He denied fecal incontinence. Additional review of systems (ROS) included numbness and “pins and needles” involving both feet for 4 weeks.

The patient had no prior surgical or urologic history.

He received the HPV and influenza vaccines about 2 weeks prior to presenting.

He reported upper respiratory infection symptoms about three weeks prior.

Physical exam revealed a Tanner 4 male with decreased sensation from mid-calf to foot bilaterally in a patchy distribution. A renal/bladder US showed no hydronephrosis bilaterally and a post void residual of 58 mL. A urinalysis, CBC, BMP, CRP, and TSH were all normal but a serum Lyme assay was elevated. MRI contrast/non-contrast of the spine showed “abnormal signal intensity within the cord from T5 to T11 with diffusion restriction as well as patchy enhancement” concerning for transverse myelitis (Fig. 1). The cervical and lumbar portions of the spine were normal.

MRI brain was negative.

A Lumbar puncture was performed without any significant CSF findings.

The patient was started on high dose methylprednisolone and IVIG in the in-patient setting. He was discharged three days later on a prednisone taper and doxycycline. At the time of discharge, the patient reported improvement in lower extremity sensation but continued to have urinary incontinence. He followed up in the office several weeks later and was noted to have near-complete resolution of his urologic

* Corresponding author. Department of Urology, Westchester Medical Center, 19 Skyline Drive 1S-B45a Valhalla, NY, 10595, USA.

E-mail address: eitan.glucksman@wmchealth.org (E. Glucksman).

<https://doi.org/10.1016/j.eucr.2023.102322>

Received 18 December 2022; Received in revised form 3 January 2023; Accepted 10 January 2023

Available online 11 January 2023

2214-4420/© 2023 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

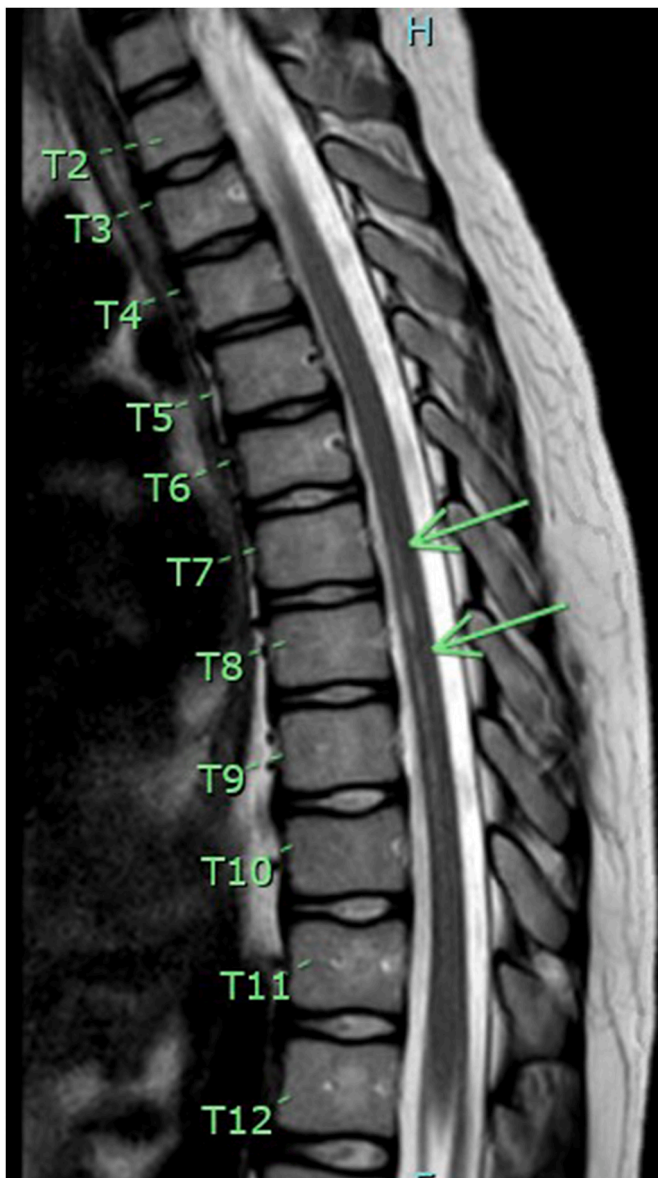


Fig. 1. T2 sagittal MRI image of the thoracic spine with abnormal signal intensity and patchy enhancement.

symptoms.

3. Discussion

Transverse myelitis is an acute inflammatory syndrome that can involve any level of the spinal cord resulting in paresis, a sensory level, and autonomic dysfunction below the level of the lesion. Lesions can be characterized as partial or complete depending on the extent of spinal cord involvement.³ TM is generally characterized by an acute, plateau, and recovery phase. Up to 95% of pediatric patients in the acute phase have been reported to develop urinary retention. 86% have been reported to have continued bladder dysfunction necessitating CIC or anticholinergics for an average of 7.1 years after disease onset.⁴

The etiology of TM can include parainfectious (e.g. bacterial, fungal, viral, parasitic infections), paraneoplastic (e.g. antibodies produced in small cell lung cancer), or idiopathic causes as well as acquired demyelinating disorders (e.g. multiple sclerosis) or systemic inflammatory disorders (e.g. systemic lupus erythematosus).²

Antecedent respiratory infections or vaccinations are common in the preceding 30 days in up to 66% of cases of pediatric TM. Pediatric TM is more frequently post-infectious, affects the thoracic spinal cord, and typically extends over 3 or more vertebral segments on MRI.^{2,3}

Functional recovery is often better than in the adult population. Nearly one-half of children make a complete recovery after 2 years. Following immunotherapy, pain is typically the first symptom to resolve followed by an improvement in motor deficits. The most common long-term neurologic complication of TM in children is bladder dysfunction.^{2,3}

Over time patients who are initially unable to void may recover volitional voiding, yet may have residual deficits, namely urinary urgency, frequency, and/or urge incontinence. However, more than half the patients on CIC at initial presentation required CIC at one year of follow-up.

Early institution of CIC may help preserve renal function in these patients. Urodynamic parameters associated with long term bladder deficits include detrusor overactivity, detrusor-sphincter dyssynergia, decreased bladder compliance, and elevated detrusor leak point pressures.^{4,5}

Urodynamic evaluation has been recommended for all pediatric patients diagnosed with transverse myelitis regardless of functional mobility and presence of bladder symptoms.⁴

Treatment of TM consists of high dose IV corticosteroids proceeding to plasmapheresis if there is no improvement.²

4. Conclusion

In this case report of a pediatric patient with new onset urinary incontinence, we highlight the importance of evaluating for the potentially morbid and life-threatening conditions that can cause this. Often the urologist is the first medical professional to evaluate such a patient and needs to maintain a high index of suspicion for a serious underlying condition.

Declaration of competing interest

None of the authors have any competing interests to declare.

References

- West TW. Transverse myelitis—a review of the presentation, diagnosis, and initial management. *Discov Med*. 2013 Oct;16(88):167–177. PMID: 24099672.
- Absoud M, Greenberg BM, Lim M, Lotze T, Thomas T, Deiva K. Pediatric transverse myelitis. *Neurology*. 2016 Aug 30;87(9 Suppl 2):S46–S52. <https://doi.org/10.1212/WNL.0000000000002820>. PMID: 27572861.
- Beh SC, Greenberg BM, Frohman T, Frohman EM. Transverse myelitis. *Neurol Clin*. 2013 Feb;31(1):79–138. <https://doi.org/10.1016/j.ncl.2012.09.008>. PMID: 23186897; PMCID: PMC7132741.
- Tanaka ST, Stone AR, Kurzrock EA. Transverse myelitis in children: long-term urological outcomes. discussion 1868 *J Urol*. 2006 May;175(5):1865–1868. [https://doi.org/10.1016/S0022-5347\(05\)00929-8](https://doi.org/10.1016/S0022-5347(05)00929-8). PMID: 16600781.
- Hannallah A, Passoni N, Peters CA, Shakir N, Greenberg B, Jacobs M. Bladder management in children with transverse myelitis, 522.e1-522522.e6 *J Pediatr Urol*. 2021 Aug;17(4). <https://doi.org/10.1016/j.jpuro.2021.04.003>. Epub 2021 Apr 21. PMID: 33947638.