

A diagnostic challenge: eosinophilic cystitis, neurogenic bladder dysfunction, or both?

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Citation

R Monteiro, M Tavares, A Barbosa, J Silva. *A diagnostic challenge: eosinophilic cystitis, neurogenic bladder dysfunction, or both?*. The Internet Journal of Urology. 2009 Volume 6 Number 2.

Abstract

Eosinophilic cystitis is a rare inflammatory disorder, which may present with dysuria, haematuria, frequency, suprapubic pain and urinary retention. The findings may mimic other disorders like neoplasm, cystitis glandularis and neurogenic dysfunction. We report a case of eosinophilic cystitis in a 73-year-old woman, with spinal stenosis, who presented urinary retention, haematuria and overflow incontinence. Urodynamic study revealed a poor compliance bladder, with high grade vesicoureteral reflux. Cystoscopy with bladder biopsy confirmed the diagnosis.

INTRODUCTION

Eosinophilic infiltrates have been found in many organs, including the urinary tract. Eosinophilic cystitis (EC) is a rare disorder, characterized by bladder inflammation with a striking infiltrate of eosinophils.¹ The first descriptions were made in 1960 by Brown² and Palubinskas³ independently.

The pathophysiology of EC is unclear, but it is, probably, caused by antigen-antibody reaction.⁴ This condition may be commonly associated with allergic diseases, drugs (cyclophosphamide, warfarin, penicillin, dimethyl sulfoxide) or after transurethral resection.⁵

Rarely, this condition may be associated to urothelial carcinoma or parasitic infection. In many cases the cause is undefined and there is no associated condition.⁶

We present a case of EC in a woman with neurogenic bladder dysfunction. In such case the correct diagnosis and management represents a challenge. The success of the treatment was based on urodynamic findings.

CASE PRESENTATION AND MANAGEMENT

A 73-year-old woman was admitted to the hospital because of low back pain, lost of the capacity to ambulate freely and urinary incontinence. She complained of chronic low back pain since 2001 and had been treated successfully with analgesics. Three months before the admission, after a fall, she had become incontinent and presented progressively disabling weakness radiating down the legs.

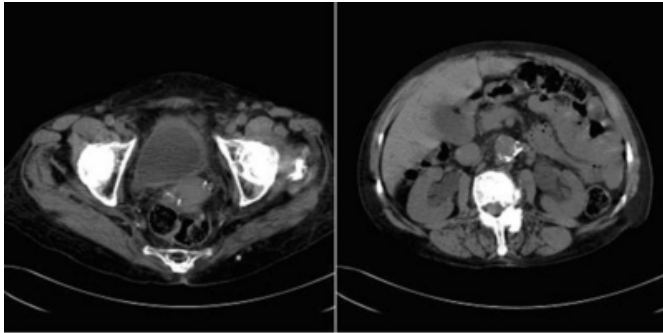
The patient referred urine leakage during all day and nocturnal enuresis, without urgency. She was using diapers, but denied fecal incontinence. She presented also multiple urinary infections, pyuria and episodic haematuria. The neurological examination evidenced symmetric muscular weakness of both legs, abolished profound reflexes and numbness in the anterior face of the left thigh.

The patient's white blood cell count was 11,700/mm³ with peripheral eosinophilia (7,6%). The level of immunoglobulin E (IgE) was normal (IgE = 27,6UI/ml). Urinalysis was positive for protein, and microscopy revealed more than 100 red and white blood cells per high power fields. Urine culture was negative.

She had not received new medications and had no known allergies. Magnetic resonance revealed spinal stenosis at the level of C4/C5 and T12/L1. Abdominal computer tomography detected bilateral hydronephrosis and a thickened bladder wall (figure 1).

Figure 1

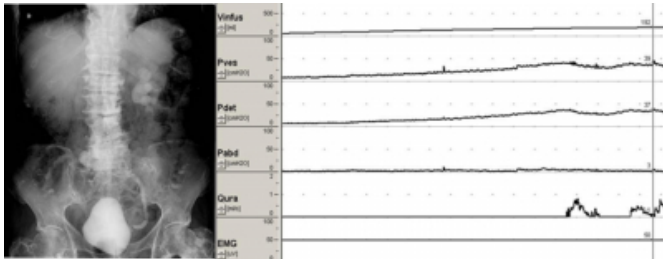
Figura 1: Abdomen CT showing bilateral hidronefrosis and bladder wall difuse thickening



Urodynamic evaluation revealed absent bladder sensation, with reduced cystometric capacity (200ml), low compliance (10ml/cmH₂O) and urine leakage with detrusor pressure of 37cmH₂O. Cystography detected grade IV left vesicourethral reflux (figure 2A).

Figure 2

Figura 2: A) Urodynamic study and cystography before the treatment. There were right vesicoureteral reflux and poor compliance

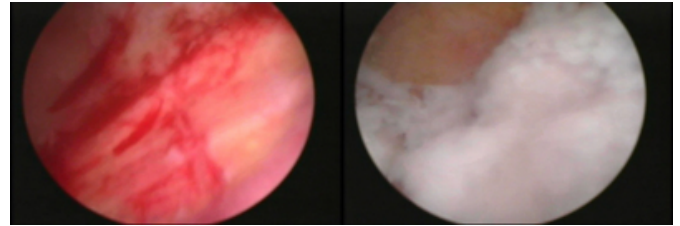


She was treated with clean intermittent catheterism (CIC) and oxybutynin (20mg/day), and was successfully submitted to laminectomy of the segments C4/C5 and T12/L2. After the procedure, she could walk again, but remained incontinent and presented severe haematuria, treated with saline irrigation.

A cystoscopy was performed and showed supratrigonal edema and hyperemia, with bleeding areas. A biopsy was performed (figure 3).

Figure 3

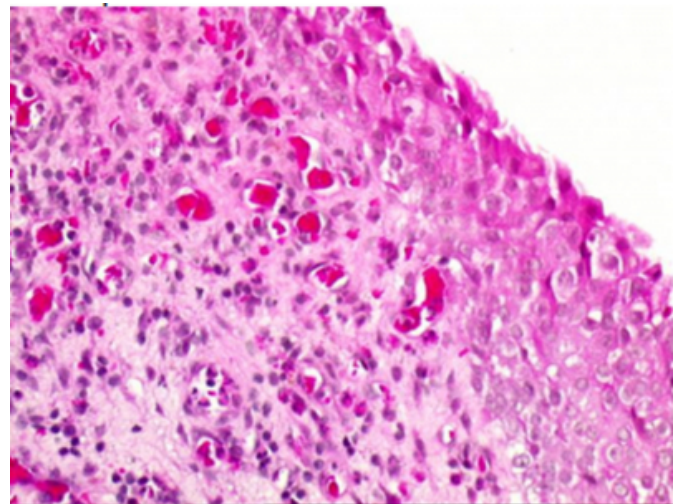
Figure 3: Cystoscopic aspect: inflammatory process of the mucosa and a large amount of mucous sediment



The bladder wash cytopathology have not revealed neoplastic cells and the histological analysis of the bladder mucosa showed chronic inflammatory infiltration, composed of some lymphocytes and many mature eosinophils (figure 4).

Figure 4

Figure 4: bladder mucosa with fibrinoleucocytary infiltration; bladder wall showing lymphoplasmocitary and polymorfonuclear infiltration, and a great number of eosinophils

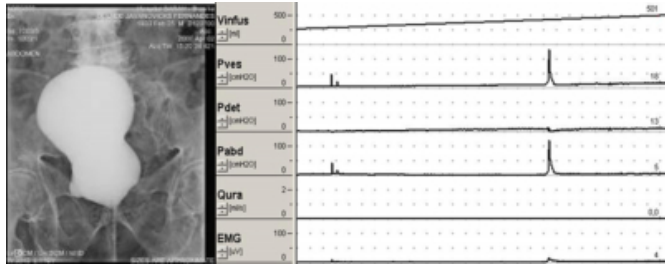


The patient received prednisone (20mg daily) and fexofenadin (60mg daily). A gradual improvement of pyuria was noted. She was discharged performing self CIC and using these medications.

Three months after diagnosis, the treatment resulted in an excellent relief of symptoms. The corticosteroid was discontinued and an urodynamic evaluation revealed an areflexic bladder with normal cystometric capacity (500ml), with maximum detrusor pressure of 12cmH₂O. The cystography have not showed vesicourethral reflux (figure 2B).

Figure 5

Figura 2: B) After treatment, there were improvement of bladder capacity and compliance, besides no more reflux



The patient was continent, without urinary infections and continued taking fexofenadin with good response for more 6 months.

DISCUSSION

The real incidence of EC is unknown. In a revision of 1000 biopsies, performed to investigate bladder cancer, the authors found EC in only 1,7%.⁷

The etiology and pathophysiology of EC is not well understood. It has been postulated that antigen-antibody complexes attracts eosinophils to the bladder wall. The antibody predominantly involved is the IgE, which after binding to the antigen causes degranulation of the mast cells.⁴

Manifestations of EC are not specific and can mimic many different disorders.⁴ In a pooled analysis of 135 cases, frequency was the most common symptom (67%), followed by dysuria (62%), haematuria (57%), suprapubic pain (49%), urinary retention (10%) and nocturnal enuresis in 1%.⁸ Except for occasional patients who are asymptomatic, 95% of patients present some combinations of symptoms.⁹

In the present case, the previous diagnosis of neurogenic bladder dysfunction was an important confounding factor.

We performed urodynamic evaluation and believed that the alterations were caused by the EC. We may also infer that the haematuria, the pyuria and the vesicourethral reflux were caused by the EC, since they were successfully treated only with corticoid and antihistaminic.

The urodynamic findings in EC have not been defined yet. For our knowledge, this is the first case of EC in which urodynamic alterations were reported before and after the specific treatment. In the present case, the low bladder compliance could have been originated by the chronic inflammatory process of the bladder wall.

There are no pathognomonic clinical or laboratory findings of EC. Generally urinalysis shows proteinuria and microscopic haematuria, but urine cultures are usually negative. Peripheral eosinophilia occurs in at least 38% of the patients. Since the eosinophils are rapidly degraded in the urine, it is unusual to find them in urinary sediment.⁹

Cystoscopy with bladder biopsy is the most important step in diagnosing EC. At cystoscopy, there often are polypoid lesions, but edema, hyperemia and ulcerations are also seen. Histologically, the finding is a mixed inflammatory infiltrate in which eosinophils are predominant.¹

The most common reported complication of EC is hydronephrosis. In the pooled analysis performed by Van den Ouden, hydronephrosis occurred in 27% of the cases. Vesicoureteral reflux was found in 4% and renal insufficiency was reported in 2 cases.⁸

The natural history of EC remains unknown, but there is a tendency to be persistent. A research conducted by Dubucquoi and col. suggests that the autocrine secretion of interleukin 5 by the eosinophils attracts more eosinophils and promote their activation, causing the chronicity of the lesions.¹⁰ For this reason, we believe that EC requires long term treatment and long term follow up.

The management of EC is primarily conservative. Non-steroidal anti-inflammatory drugs, anti-histamines and corticosteroids have been used. Other treatments used include cyclosporine, dimethylsulfoxide, cyclophosphamide and montelukast. Transurethral resection of the bladder seems to be very successful when the bladder lesion is limited.⁴

In this case the conservative management was successful. Because of the risk of recurrence and chronicity, the therapy must be used for a long period.

CONCLUSIONS

The identification and evaluation of EC are challenging. The critical step in establishing the diagnosis is the cystoscopy with bladder biopsy. The association of neurogenic bladder dysfunction is an important confounding factor.

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