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CASE REPORT

Acute Urinary Retention in Aseptic Meningitis: Meningitis-retention Syndrome

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Abstract

Here we present the case of a 50-year-old woman with acute urinary retention who was treated by the insertion of a permanent catheter. For associated headaches, fever and muscle and joint pain, the patient underwent neurologic examination, including lumbar puncture and magnetic resonance of head and spine. The results confirmed aseptic meningitis. Subsequently, the patient was hospitalized at the infectious disease clinic, where the permanent catheter was extracted after 5 days, with spontaneous micturition recovery and no post-void residual volume. The combination of aseptic meningitis and urinary retention is called meningitis-retention syndrome. This is a rare disease, which has been described only a few times in the literature.

INTRODUCTION

Urine retention is an acute urological condition requiring urinary drainage. The most common cause of urinary retention is subvesical obstruction due to prostatic hyperplasia or urethral stricture (Blok *et al.* 2018). Urinary retention may also have neurogenic causes. Spinal trauma, cerebrovascular disease, Parkinson's disease, Shy-Drager syndrome, and multiple sclerosis can result in lower urinary tract dysfunction (Dvořáček *et al.* 1998). All of these diseases may cause secondary symptoms, such as urinary retention, progressively worsening micturition, or even alternating hyperreflexion or atonic bladder, depending on the stage of the disease (Blok *et al.* 2018). However, we have to emphasise that urinary retention may not only cause chronic neurological diseases such as multiple sclerosis but also acute inflammatory conditions such as aseptic meningitis (bacterial inflammation, viral sacral herpes) (Dvořáček *et al.* 1998; Sakakibara *et al.* 2005; Tae-Wan *et al.* 2010; Fotinie *et al.* 2011; Krishna *et al.* 2012; Shah *et al.* 2016; Yasushi *et al.* 2016).

Meningitis – retention syndrome (MRS) is known as a combination of urinary retention and aseptic meningitis (Sakakibara *et al.* 2005; Krishna. *et al.* 2012). The most common pathogens are enteroviruses, flaviviruses, arboviruses and herpes simplex viruses (Fotinie *et al.* 2011; Cartier *et al.* 2014; Shah *et al.* 2016; Savoldi *et al.* 2017).

Here we present the case of a 50-year old woman with urinary retention and aseptic meningitis.

CASE STUDY

A 50-year old female patient presented to the urology clinic with acute urinary retention lasting several hours. In preceding days she had experienced headaches, gradually progressing cephalalgia, pain reaching its maximum in the frontal area (worsening with bending forward), without vegetative symptoms. The patient also suffered from arthralgia and myalgia, especially in the lower extremities – without radicular irritation, and temperatures up to 38˚C. Her previous medical history was otherwise unremarkable. Gradual spontaneous regression of symptoms was noted, apart from persisting inability to micturate. Laboratory findings were also unremarkable: C-reactive protein (CRP) 0.4, leukocytes (WBC) 9.8, glucose (GLC) 5.

The patient was sent for an ultrasound scan that revealed voluminous filling of the urinary bladder. About 1,000ml of yellow urine was drained by catheterisation. Cystoscopy was performed with no pathological changes found. Due to urinary retention, permanent urinary catheter was inserted. The patient was sent to neurology clinic for further examinations immediately. Given this rapid transfer, urodynamic testing was not performed.

Magnetic resonance (MRI) of the brain was obtained (natively, TSE T2, FLAIR, SE T1, T2 and DWI images, transverse and coronary plane), cervical (TSE T2, TSE T1, T2 STIR, , T2, STIR T2) and lumbar spine (native, T1, T2 frFSE, T2 frFS) - no pathological findings were noted. There were no signs of spinal cord myelopathy. Lumbar puncture was performed and the finding in the cerebrospinal fluid corresponded to viral inflammation of the aseptic meningitis (proteins 0.64, glucose 2.63, erythrocytes 2080/3, mononuclear 512/3, polynuclear 1/3, spectrofoto neg., CRP 0.5, WBC 9.8). The patient was hospitalised at the infectious diseases clinic where she started antiedematous intravenous treatment with Mannitol, recommended bed rest and the patient was prescribed acyclovir (parenterally, 10 mg/kg every 8 hours) until herpetic aetiology could be ruled out.

Neither CSF analysis test, PCR, ELISA, nor microbiological, virology or serology investigations isolated any typical infectious agents. Herpetic infections - herpes simplex virus (HSV) 1,2, human herpes virus 6 (HHV 6), Ebstein-Barr virus (EBV), herpes simplex virus (HSV), herpes simplex virus 6 (HHV 6), herpes simplex virus, varicella zoster virus (VZV), enteroviruses, Mycoplasma pneumonia were all ruled out and treatment with acyclovir was discontinued.

Catheter was removed after 5 days of hospitalisation. For the sensation of post-void residual one dose of syntostigmin 0,5mg (intravenously) was administered. The patient reached full recovery of spontaneous micturition, ultrasound (USG) showed post-void residual volume of 20ml. On the eight day of hospitalisation the patient was discharged for home convalescence without any neurological deficit.

In the following four months after discharge, the patient had been experiencing rest and exercise-induced leg pain. The patient was sent for electromyography (EMG) that revealed myositis, nerve conduction being within normal range, creatine-kinase in blood serum was negative. The patient is still in recovery.

DISCUSSION

We present a case of a female patient whose primary disease of aseptic meningitis was accompanied by an usual further complication of urinary retention. Imaging did not show any damage to the central nervous system, CSF analysis proved aseptic meningitis. Common infectious agents were not found.

Aseptic meningitis is a common condition (10/100 000/year); its combination with acute urinary retention is, however, rare. Prevalence of meningitis-retention syndrome (MRS) is unknown, most likely because of insufficient recognition during the treatment of aseptic meningitis (Hiraga A. *et al.* 2018). The mechanism through which urinary retention develops in patients with aseptic meningitis is also unknown (Basoulis D. *et al.* 2015). In the case of Elsberg syndrome (herpetic acute lumbosacral radiculomyelitis), virus reactivates in sacral ganglia with axonal spinal cord propagation (Savoldi F. *et al.* 2017). In the case of MRS, the mechanism is unknown. Published case reports attempt to explain the finding with several hypotheses. One possible cause of the condition is related to the spinal shock after meningeal irritation. Another possible cause is the development of post – infective acute disseminated encephalomyelitis (Sakakibara R. *et al.* 2005, Krishna A. *et al.* 2012, Basoulis D. *et al.* 2015). Further, the lesions of sacral and lumbosacral nerves leading to the acontractile detrusor and incompetence of the urethra are all associated with the hyposensitivity of the detrusor. (Fotinie *et al.* 2011; Shah *et al.* 2016) This condition is closest to those found in Elsberg's syndrome, but radicular symptoms are missing here.

The finding of atonic or hypotonic neurogenic bladder was confirmed by urodynamic examinations in some cases (Basoulis *et al.* 2015; Gen *et al.* 2016; Tanaka & Satomi 2017). An interesting fact is that the cystometry test confirmed sensitivity within the normal range, but patients were either not able to develop enough detrusor pressure to expel the entire bladder volume, or the detrusor did not contract at all. (Sakakibara *et al.* 2005; Basoulis *et al.* 2015) In the case of our female patient, we did not perform cystometry as the patient was transported for further examinations in other hospital locations.

According to the available literature, spontaneous micturition recovery occurs within 14 days (Sakakibara *et al.* 2005; Tae-Wan *et al.* 2010; Krishna *et al.* 2012; Gen *et al.* 2016), in some cases it can be within 7 days (Basoulis *et al.* 2015; Savoldi *et al.* 2017). Full micturition recovery was not reached in one case even after

15 days. This female patient had the capacity for spontaneous micturition but with large post-void residual volumes. This patient performed clean intermittent catheterisation (CIC) after discharge from hospital (Fotinie *et al.* 2011). In two cases patients were educated in CIC which they performed until spontaneous voiding resumed (Urakawa & Ueda 2001; Zenda *et al.* 2002) One case of a 13-year old child has been outlined in the literature (Shimizu *et al.* 1999).

CONCLUSION

Meningitis - retention syndrome is a rare disease. It is a combination of urinary retention and aseptic meningitis. Several cases of this disease are described in the literature. Urological examination should exclude organic bladder and urethral damage. From a neurological point of examination, aim is to eliminate causes due to neurodegenerative diseases. According to the conclusions of the published literature, most patients with MRS have a spontaneous recovery of micturition within 14 days. Neurological or micturition impacts are not documented in more detail in patients in the available literature.

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