Meningitis-retention syndrome
An unrecognized clinical condition

Introduction

Acute urinary retention is a symptom of urological emergency. Whereas urinary retention in elderly men is mostly attributed to prostate hypertrophy, urinary retention in childhood, young adults and in women is very uncommon [1], which may have a neurological etiology when accompanied by no other abnormalities. Objective To describe the results of a uro-neurological assessment in our patients with MRS. Methods In three patients (two men, one woman; age, 34–68 years), we performed urodynamic studies and relevant imaging and neurophysiological tests, in addition to cerebrospinal fluid (CSF) examination. Results All three patients developed acute urinary retention along with headache, fever and stiff neck. None had obvious neurological abnormalities, other than a slightly brisk reflex in the lower extremities. One had previously experienced generalized erythematous eruptions, but none had pain, hypalgesia or skin eruptions suggestive of Elsberg syndrome (infectious sacral polyradiculitis; mostly genital herpes). Brain/spinal/lumbar plexus MRI scans and nerve conduction studies were normal. CSF examination showed mild mononuclear pleocytosis, increased protein content, and normal to mildly decreased glucose content in all patients; increased myelin basic protein suggestive of central nervous system demyelination in one; and increased viral titers in none. Urodynamic study revealed, during the voiding phase, an underactive detrusor in all patients and an unrelaxing sphincter in one. These clinical manifestations were ameliorated within 3 weeks. Conclusions We reported three cases of MRS, a peculiar syndrome that could be regarded as a mild variant of acute disseminated encephalomyelitis (ADEM). Urinary retention might reflect acute shock phase of this disorder. Although MRS has a benign and self-remitting course, management of the acute urinary retention is necessary.

Key words meningitis-retention syndrome · urinary retention · aseptic meningitis · acute disseminated encephalomyelitis (ADEM) · Elsberg syndrome · underactive detrusor
normalities. To our knowledge, only a few case reports of this syndrome are available, most of them having been reported in Japan [4–8] and the underlying pathophysiology of MRS remains unclear. We here describe the results of a uro-neurological assessment in our three patients with MRS.

Case reports

Case 1

A 46-year-old man began an acute febrile illness with headache. Four days later, he developed abdominal distention. Transurethral catheterization revealed 800 ml of residual urine, and an indwelling balloon catheter was inserted into the bladder. The patient had no constipation or erectile dysfunction. He had no skin eruption including the perineal area. Neurological examination showed a marked stiff neck, a positive Kernig sign, slightly brisk lower extremity reflexes, and he had fine postural tremor of the fingers. Sensation was normal including the perineal area. Laboratory examination showed no leukocytosis or increased C-reactive protein. There was no abnormality in blood chemistry and urinalysis except for a serum glucose level of 125 mg/dl. The cerebrospinal fluid (CSF) examination showed mononuclear leukocytosis of 290/mm³, increased protein content of 80 mg/dl, and a mildly decreased glucose level of 41 mg/dl (33 % of serum glucose). Bacterial smears and cultures, including tuberculosis and cryptococcus, were negative. The CSF enzyme immunoassay showed negative IgM antibodies of herpes simplex type-1 (HSV-1) and herpes zoster viruses (VZV). IgG antibodies of HSV-1 and VZV were 0.46 (normal < 0.2) and negative, respectively. There was no increase in adenosine deaminase, myelin basic protein (MBP), or oligoclonal bands (OCB) in the cerebrospinal fluid. Magnetic resonance imaging (MRI) scans of the brain and the spinal cord were normal. From the laboratory findings, particularly of decreased CSF glucose level, we initially suspected meningitis due to HSV-1 or cryptococcus, and started 1500 mg/day of aciclovir and 400 mg/day of fluconazole, respectively. Five days later, his headache and fever ameliorated, although there was no evidence in cultured cryptococcus or virus titer change in the follow-up CSF examination. After pulling out the balloon catheter, the patient became able to urinate. However, he still had voiding difficulty and we performed a urodynamic study on the 11th hospital day.

After voluntary voiding, he had a post-micturition residual volume of 100 ml (normal < 30 ml). A double-lumen 8F catheter (for use with saline infusion and intra-vesical pressure measurements) was inserted into the bladder. We performed a medium-fill (50 ml/min) electromyography (EMG)-cystometry with a urodynamic computer (Janus; Lifetech Inc, Houston, TX, USA) and an electromyographic computer (Neuropack Sigma; Nihon Kohden Inc, Tokyo, Japan), simultaneously recording the detrusor pressure, which is the difference between the intra-vesical and intra-abdominal (rectal) pressures, sphincter EMG via a concentric needle electrode in the external anal sphincter muscle, and urinary flow via a uroflowmeter. The methods and definitions used for the urodynamic study conformed to the standards proposed by the International Continence Society [9]. Sphincter EMG revealed normal voluntary contraction of the sphincter. During bladder filling, he had a first sensation at 130 ml (100 ml < normal < 300 ml) and a bladder capacity of 500 ml (200 ml < normal < 600 ml); we then stopped infusing saline into the bladder. He did not show detrusor overactivity during filling even after provoking the maneuver by coughing. When we asked him to void, however, he was unable to contract his bladder at all (underactive detrusor). The sphincter EMG activity persisted on voiding (unrelaxing sphincter), which normally disappears completely. He did not have prostatic hypertrophy by digital examination and abdominal echography. In order to ameliorate the voiding difficulty, he was taught clean, intermittent self-catheterization (CISC) twice a day. We also started 150 mg/day of bethanechol chloride (cholinergic agent) and 0.2 mg/day of tamsulosin hydrochloride (alpha-blocker). These treatments gradually ameliorated his voiding difficulty, and a week later, his residual urine volume became less than 30 ml.

Case 2

A 68-year-old woman began to have an acute fever, headache, appetite loss, and at the same time, urinary frequency and a lower abdominal pain. Transurethral catheterization showed 500 ml of urine, and an indwelling balloon catheter was inserted. She had no constipation. She had no skin eruptions, including in the perineal area. On neurological examination, she was inactive, slightly drowsy, and had a mildly stiff neck. She had normal deep tendon reflexes. Sensation was normal, including in the perineal area. Laboratory findings were normal except for mild liver dysfunction (AST 59; normal < 40 IU/l, ALT 66; normal < 45 IU/l, LDH 469; normal < 442 IU/l), but her abdominal CT findings were normal. The CSF examination was performed on the 7th hospital day, which showed mononuclear leukocytosis of 108/mm³, an increased protein content of 97 mg/dl, and a mildly decreased glucose level of 41 mg/dl (45 % of serum glucose). At that time, her headache and fever resolved spontaneously. Bacterial smears and cultures were negative. The CSF complement fixation test revealed negative titers of HSV-1, VZV, Coxsackie’s, echo, mumps, measles, rubella, adenov, or cytomegaloviruses.