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Consensus guidelines on the neurologist's role in the management of neurogenic lower urinary tract dysfunction in multiple sclerosis

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ABSTRACT

Objective: To review current management of neurogenic lower urinary tract dysfunction (NLUTD) in MS patients and give recommendations on the joint role of the neurologist and urologist in NLUTD management.
Methods: An algorithm for evaluation and referral of MS patients to urologists was created. It is an outcome of discussions about current knowledge, existing guidelines, and key issues during two Belgian consensus meetings attended by neurologists, urologists and other stakeholders involved in MS management. At these meetings, updated information on management of NLUTD in MS was exchanged and the neurologists' opinion on how to integrate this in the other aspects of care in MS patients was explored.
Results: Short evaluation of NLUTD in MS patients by neurologists and appropriate referral to urologists could accelerate proper diagnosis and treatment. Neurologists can play a central role in the interdisciplinary communication on interactions between disease manifestations of MS and their treatments.
Conclusion: The coordinating role of neurologists in NLUTD management may considerably improve QoL in MS patients. More research is needed to evaluate outcomes of urological assessments and treatment.

1. Introduction

MS is a chronic inflammatory disorder associated with central nervous system demyelination, which leads to a loss of saltatory conduction and conduction velocity in axonal pathways. The disease mostly affects women and is usually diagnosed between the age of 25 and 40 years [1]. In early stages, MS usually follows a relapsing and remitting course, with symptomatic attacks or exacerbations that partially or fully resolve [2]. The secondary progressive phase, occurring in about 50% of patients after 10 years, is associated with a gradual progression of disability with or without superimposed exacerbations. A minority of MS patients start with a progressive course from onset.

Signs and symptoms vary widely by individual patient case, depending on the location of the affected nerve fibres. Typical symptoms include numbness or weakness in one or more limbs, loss of vision, tingling or pain in parts of the body, tremor, lack of coordination or unsteady gait, fatigue, dizziness, muscle stiffness or spasticity, speech problems, dysphagia with or without hypersalivation (drooling), and cognitive impairment [1]. About 75% of patients with MS suffer from lower urinary tract symptoms (LUTS) due to neurogenic lower urinary tract dysfunction (NLUTD). LUTS are among the most bothersome symptoms of MS [3,4]. If not managed properly, NLUTD may cause irreversible changes in the lower and upper urinary tract [5].

Despite the high prevalence of NLUTD in MS patients, its profound impact on QoL and the risks associated with persistent NLUTD, the presence of LUTS does not always lead to urological

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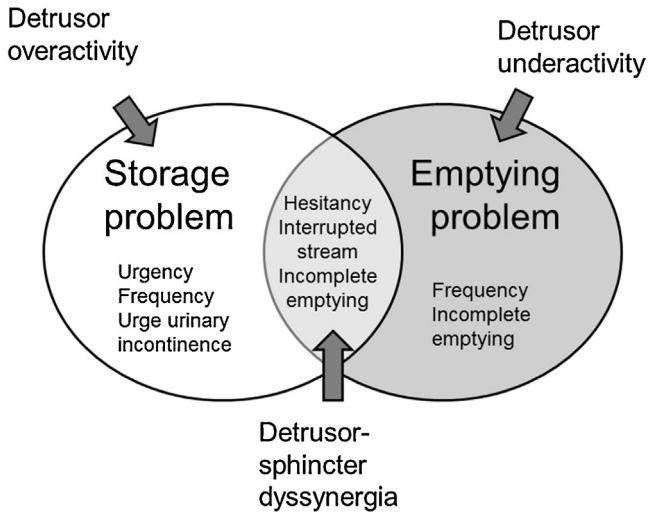

Fig. 1. Diagram showing the aetiology of neurogenic bladder dysfunction in patients with multiple sclerosis.

evaluation and treatment in these patients, even if symptoms are bothersome [6]. Only a minority of neurologists appears to raise questions on bladder, bowel or sexual dysfunction spontaneously. In order to plan proper and early management, there is need for a better definition of the neurologist's position in the management of NLUTD in MS patients and for a referral algorithm for these patients.

The current consensus paper provides up-to-date information on the diagnosis and treatment of NLUTD in MS patients and recommendations on the joint role of neurologists and urologists in the management of these problems.

2. Materials and methods

Recommendations on bladder management by neurologists and urologists were established during two consensus meetings based on current literature. These meetings were mainly attended by neurologists, but also by other stakeholders involved in the management of patients with MS (i.e. urologists, psychiatrists, rehabilitation physicians, and otorhinolaryngologists). Neurologists and urologists reviewed current evidence on signs and symptoms, diagnosis, and treatment of NLUTD in MS patients and exchanged information in order to assess potential problems related to the concomitant management of NLUTD and other symptoms frequently present in these patients (i.e. spasticity, fatigue, cognitive impairment, and dysphagia with or without hypersalivation).

3. Results and discussion

3.1. Review of the literature

3.1.1. Types of LUTS in MS

MS patients may present with both storage or overactive bladder (OAB) symptoms (e.g. urgency, daytime frequency, nocturia, incontinence) and voiding symptoms (e.g. slow stream, intermittent stream, hesitancy, incomplete emptying) [7]. Urodynamic studies have shown that the most prevalent urinary conditions in these patients are detrusor overactivity (DO), detrusor sphincter dyssynergia (DSD) and detrusor hypocontractility (Fig. 1) [8,9]. NLUTD in MS patients is generally the result of spinal cord disease with a disconnection between centres in the brainstem and the sacral part of the spinal cord [4]. Intracerebral MS pathology may also disturb the pathways controlling micturition and urinary continence. The site of the lesion in the central nervous system determines the type of dysfunction [8,10–13].

Cortical lesions can abolish the supraspinal suppression of the pontine micturition centre that controls autonomous bladder contractions [11,14]. This may result in neurogenic DO (NDO), which is a common cause of OAB.

Medullary lesions between the pontine and sacral micturition centres may cause urethral dysfunction, i.e. disturbances of urine storage and bladder emptying, with DSD being the most extreme defect [11,14]. In patients with DSD, detrusor contractions occur concurrently with involuntary contractions of the internal and/or external sphincter [7]. These patients tend to have poor bladder emptying, compounded by poorly sustained detrusor contractions. Typical symptoms suggestive of DSD in these patients are hesitancy, intermittent stream and a high post-void residual (PVR) [10]. In MS patients, DSD can also be associated with bladder calculi and infection [11].

Intracerebral plaques may disturb sensory input processing, which may lead to loss of perception of bladder fullness and inability to inhibit bladder contractions voluntarily [11]. Loss of inhibition may lead to NDO.

Sacral plaques have been suggested to inhibit facilitated detrusor contraction in MS patients. However, the sole contribution of sacral plaques to detrusor hypocontractility and acontractility remains controversial. A histological study showed sacral plaques in only 18% of cases, which could not account for the high proportion of patients with reduced detrusor contractility found in urodynamic studies [8,12].

3.1.2. Prevalence

Estimates of the proportion of MS patients with NLUTD vary around 75%. In a review of 22 published series of primarily symptomatic MS patients (total $N = 1882$), NDO was present in 62% of patients as the primary urodynamic diagnosis; DSD occurred in 25% and hypocontractility in 20% of patients [11]. However, most MS patients have a combination of these urological conditions. Among patients with NDO, 43% have DSD [11]. In the latter group of patients, involuntary detrusor contractions may occur against a closed sphincter, causing both storage and emptying problems. These patients can present with urgency, frequency, paradoxal urgency/hesitancy (which is urgency followed by subsequent inability to start voiding), intermittency and incomplete emptying. In some cases, reflux of urine to the ureters may occur (in about 5% of patients), which may result in renal failure if left untreated [15].

In most instances, the severity of LUTS in MS patients is related to the level of walking disability [4]. Several clinical associations between brain or spinal cord involvement and LUT dysfunction have been reported. Goldstein et al. suggested an association between hyperactive deep tendon reflexes and DSD [16]. In addition, a correlation was found between cerebellar signs such as ataxia and detrusor areflexia [17]. An association was also shown between pyramidal dysfunction and LUTD, suggesting that both problems reflect the extent of spinal involvement [10]. Therefore, a history of lower extremity sensory or motor loss can be a sign of unrecognised urological pathology. This also implies that practically all patients who experience walking difficulties will have NLUTD.

Although LUTS are rarely life threatening, they are among the most bothersome symptoms of MS [3]. In a postal survey among patients with MS, 87% of the patients reporting symptomatic problems ($n = 2265$) had bladder problems and 70% classified the impact of their bladder problems on quality of life (QoL) as moderate or high. If left untreated, persistent NLUTD may cause irreversible changes in the lower and upper urinary tract [5]. NLUTD can also worsen other MS symptoms such as fatigue and disability and can