Lower urinary tract dysfunction due to multiple sclerosis

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Multiple sclerosis (MS) is a chronic neurological disease that commonly affects lower urinary tract function. In fact, change in bladder function may be the presenting complaint in as many as 10% of patients suffering from this condition and eventually up to 80% of patients with MS will suffer bladder symptoms.

Key Words: multiple sclerosis, neurogenic bladder dysfunction

Demographics and types of multiple sclerosis

Multiple sclerosis affects 1/1000 North Americans and has a two-fold predilection for women.[1] It tends to afflict young and middle aged adults. Autoimmune demyelination of white matter in the brain and spinal cord causes the neurological deficits, but a complete understanding of the etiology of MS has not been fully elucidated.

Multiple sclerosis is subcategorized into relapsing remitting, primary progressive, and secondary progressive subtypes. Relapsing remitting disease is characterized by relapses or flares with partial or complete recovery in between. This is the most common type of MS. Primary progressive disease implies a continuous progression from onset of symptoms with no improvement intervening. This type of MS is the most common to have urinary dysfunction. Finally, relapsing remitting MS may eventually change to continuous progression of symptoms and at this point it is referred to as secondary progressive MS. Some patients with MS display only minimal deficits despite 10 to 20 years of disease, which is denoted as benign MS. Others have a rapidly progressive course termed malignant MS.

Acute neurological flares in relapsing remitting MS may be successfully managed by steroids and disease modifying therapy such as Beta Interferon or Glatisamer acetate has been shown to lower relapse frequency by up to 35%.[2] Unfortunately, there is no proven therapy to alter the course of primary progressive MS.

Lower urinary tract manifestations in multiple sclerosis

While many neurological diseases affect the lower urinary tract, MS warrants a few unique considerations. Firstly, the demyelinating plaques of MS may affect different areas of the central nervous system over time. Thus, lower urinary tract manifestations may vary in time and type unlike a static injury such as spinal cord injury or spina bifida.

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In addition, the lesions may affect the spinal cord and/or higher central nervous system centres leading to quite a varied urological presentation. Finally, cognition and manual dexterity may be affected with time impacting on considerations for more involved reconstructions especially those relying on permanent need for intermittent catheterization.

The most common manifestations of MS on the lower urinary tract are: detrusor overactivity (34%-99%), mixed detrusor overactivity and impaired contractility (60%), detrusor striated sphincter dyssynergia (30%-65% of those with detrusor overactivity), and detrusor underactivity (5%-20%). Other less common manifestations include sphincteric flaccidity (<15%) and detrusor smooth sphincter dyssynergia (rare).[3]

There is some controversy in the literature as to whether the demyelinated plaques of MS correlate well with urinary tract manifestations. Ukkonen et al found that the volume of plaques, but not the location of plaques, correlated with urodynamic findings.[4] Whereas, Araki et al did correlate both detrusor sphincter dyssynergia and bladder underactivity with lesions in the pons or spinal cord.[5]

In addition to these common urinary manifestations, sexual dysfunction in both male and female patients with MS is very common and correlates well with the severity of coexisting urinary complaints. Sexual dysfunction can have a large impact on patient quality of life and clinicians should remember to query patients regarding such dysfunction to facilitate management when appropriate.

Evaluation and management of lower urinary tract manifestations of multiple sclerosis

Urodynamic testing should be done liberally in patients with MS. This is because symptoms bear little relationship to urodynamic findings and clinically significant urodynamic findings may change over time in the absence of reported change in urological symptomatology.

In many conditions, it is well known that symptoms bear little relationship to urodynamic findings. Multiple sclerosis is no exception. For example, Kragt et al found that symptom scores showed no correlation to measured post void residuals.[6] In addition, Ciancio et al showed that 55% of patients with MS displayed clinically significant changes in urodynamic parameters on repeated urodynamics over a 10 year period.[7] Of these, only 50% had a corresponding change in symptoms that might have prompted the clinician to repeat the study.

While MS may yield varied urological manifestations, the management options once the functional alterations have been diagnosed by history and urodynamics, are really no different than those available for other neurological or idiopathic conditions. These are indicated in Table 1.

TABLE 1. **Management of the specific lower urinary tract manifestations of multiple sclerosis**

Detrusor overactivity
Behavioral therapy (diet, timed voiding, pelvic floor rehabilitation)
Anticholinergic/mixed action medications
DDAVP
Intravesical botulinum toxin A
Sacral neuromodulation
Reconstructive surgery (augmentation, diversion)
Detrusor underactivity
Crede or abdominal pressure voiding
Clean intermittent catheterization
Indwelling catheter
Sphincterotomy/stent with condom catheter in men
Detrusor sphincter dyssynergia
Skeletal muscle relaxants (benzodiazepines, baclofen – not particularly effective)
Intra sphincteric botulinum toxin A
Intermittent or indwelling catheter
Sphincterotomy/stent with condom catheter drainage in men

It would be relatively rare to undertake major reconstructive surgical interventions for the lower urinary tract dysfunctions associated with MS. This is because generally when the bladder dysfunctions have progressed to the point of consideration of augmentation or diversion, the patient has also suffered coexistent decline in other general functioning to the point where the bladder manifestations may no longer be the primary concern. Simple diversions such as an ileal conduit may be appropriate in cases such as upper tract deterioration or failure to heal pressure ulcers due to urinary contamination.

Conclusions

Multiples sclerosis frequently results in severe dysfunctions of the lower urinary tract, which may vary over time. Symptoms may be unreliable in predicting urodynamic dysfunctions and thus urodynamic studies should be performed liberally to enable optimum care. Managements of the individual dysfunctions are similar to those for other neurological diseases but must take into considerations the potential for alterations over time along with possible simultaneous deterioration in cognition or independent care. □

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