

Symptoms, effects and management

Bladder Problems

Difficulty with bladder control and walking are common problems for people with MS¹. These two problems often go together because both disorders are due to spinal cord disease. Figure 1 shows how the nerves to the bladder and nerves for sexual function come off the spinal cord lower than the nerves to the legs, so that neurologically speaking the bladder is 'below' the legs. This means that if there is demyelinating disease higher up in the spinal cord (for example in the cervical region), the nerves to both the legs and the bladder are likely to be affected². The effect of this can be most unfortunate since bladder control may deteriorate at the same time as mobility worsens, making it increasingly difficult to respond to bladder urgency by hurrying to the toilet.

Poor bladder control can be very disabling and many regard this as one of the worst aspects of their MS³. Unpredictable urinary urgency with a danger of incontinence can cause the person to become housebound, unwilling to venture out where access to toilets is uncertain. Although urgency and frequency of micturition are the most common problems, many people with MS also notice difficulty in emptying their bladder. For example, they may find it hard to start passing urine at a time when they do not have urgency, eg just before going out. They may also have a reduced flow rate, an interrupted stream and a feeling of incomplete bladder emptying. Fortunately, much can be done to help.

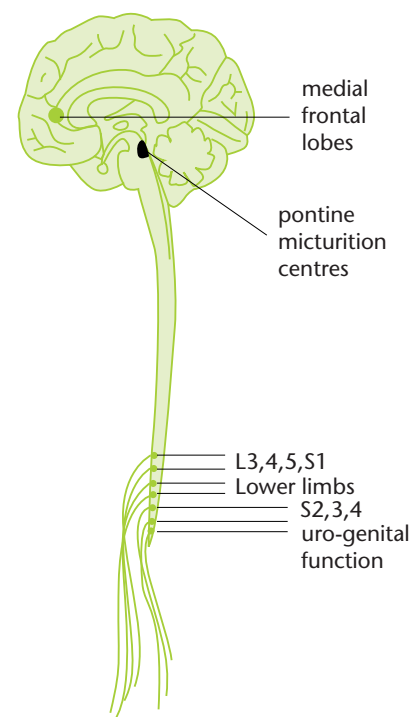
The bladder disorders that occur in MS are of two distinct types: **overactivity and incomplete emptying**⁴. Although the problems may be interrelated they will be discussed separately, in the first instance, as their treatments are different.

Bladder overactivity

Bladder overactivity is the problem that the person with MS is usually most aware of. It results in a tendency for the bladder to contract unpredictably and sometimes uncontrollably. At its worst, the bladder may seem to have 'a life of its own'.

In health, the bladder behaves a bit like a balloon although there is a significant difference — unlike a balloon it has a special property that enables it to expand without raising its inside pressure. This remarkable property is the result of its nerve supply which comes down the spinal cord from controlling centres in the brain and, in particular, from the micturition centre, situated at the base of the brain (see Figure 1). With spinal cord disease this connection is disrupted and the special property lost; the bladder becomes overactive or what used to be called "hyperreflexic". Hyperreflexia is also seen in the neurological changes in the legs, as the reflexes become over reactive and contract vigorously in response to a light tap with the tendon hammer. Similarly, the bladder, after only partial filling, develops spontaneous, insuppressible contractions and with each of these, the person senses urinary urgency. Incontinence may occur if the contraction pressures are too high for the muscles at the bladder outlet to hold on, and the problem made worse if mobility is affected and it is difficult to reach the toilet in time.

Figure 1:



This diagram shows how the nerves to the legs come off the spinal cord, above those to the bladder. The micturition centre at the base of the brain is shown by the large black dot. If there is disease affecting the spinal cord (in the cervical cord area, a common site for demyelination in MS), neural impulses between the micturition centre and the nerves to the bladder will be interrupted, as will impulses between the brain and nerves to the legs. It is for this reason that difficulty with walking is usually associated with poor bladder control in multiple sclerosis: both problems can be the result of spinal cord disease.

Another feature of the impaired nerve supply to the bladder muscle is that the normal capacity is diminished, causing urinary frequency. In health, the bladder has a capacity of between 300 and 500ml (about a pint of fluid), whereas the capacity of the overactive bladder may be reduced to 100ml or less. This increases the frequency of emptying from every 3–5 hours (depending on how much is drunk) to hourly or worse.

Treatment

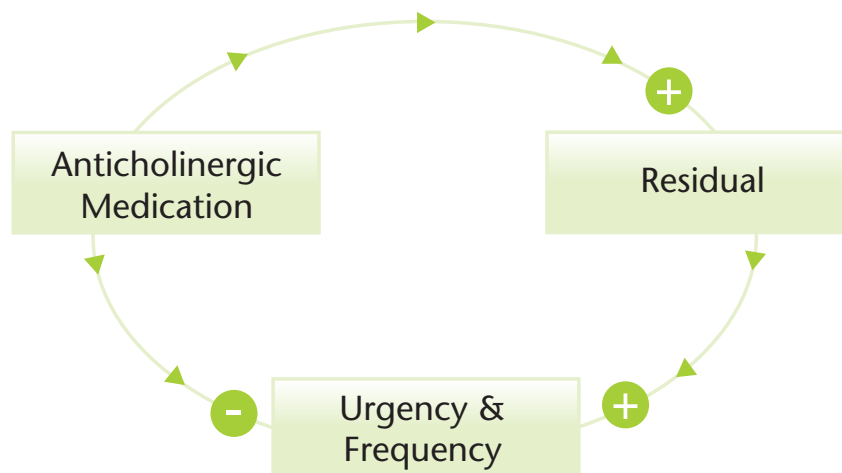
The treatment for the disorders which result from a failure of the bladder's storage capacity is to give anticholinergic medication⁵. The names of the drugs of this type are shown in Table 1. All have the likelihood of causing a dry mouth as common side-effect. This occurs because the kind of chemical messenger that the body uses to cause the bladder to contract is the same as activates the salivary glands and therefore both functions are reduced by the drug's action. A dry mouth is evidence that an effective dose is being taken. People are asked to adjust their medication carefully, adding an extra tablet at intervals of some weeks, so that their bladders are under control but their mouths are not too dry. If too uncomfortable, then artificial saliva may be prescribed, in either tablet or spray form.

In the patient information leaflets supplied by the manufacturers a large number of other possible side-effects are mentioned. The majority of these are uncommon, particularly for those taking the low dosage necessary to treat the bladder disorder that occurs in MS.

Anticholinergic drugs usually have a good effect on bladder overactivity but there is a situation in which they may make things worse. This happens when, in addition to having an overactive bladder, the bladder does not empty properly. In this situation, the medication, while lessening the tendency for the bladder to contract, also impairs its already poor emptying ability (Figure 2). The way around this is to deal with the problem of incomplete bladder emptying first.

Figure 2:

Although anticholinergic medications (Table 1) are effective in reducing detrusor hyperreflexia they may also impair bladder emptying. The resulting increase in postmicturition residual volume may then lead to worsening symptoms of urgency and frequency.



Symptoms, effects and management

Incomplete bladder emptying

Although some people with MS are aware that their bladders do not empty properly, others with the same problem are not. For many, needing to void again soon after doing so is usually an indicator that bladder emptying is poor. Research has shown that if people with MS thought they were not emptying their bladder properly, they were usually correct. However, of those who thought they were emptying completely, about half were wrong and were surprised to find how much urine they had been leaving behind².

Incomplete bladder emptying is the result of two things going wrong, both of which are due to spinal cord malfunction:

1. The muscle which surrounds the bladder outlet tube (urethral sphincter) does not relax when the bladder muscle contracts, but instead goes into contraction, thus causing an interrupted flow.
2. The neural impulses which in health keep the bladder muscle contracting until it is completely empty do not get down the spinal cord. When the bladder does contract, the contractions, although frequent, are poorly sustained.

Treatment

There are no effective medications for improving bladder emptying yet. Therefore, the best way of managing the problem is through intermittent self-catheterisation (ISC). This technique has been in use for nearly 30 years⁶ and has brought about the greatest improvement in managing the bladder problems of MS⁷. The crucial investigation in deciding whether or not ISC will help is the measurement of post-micturition residual volume, i.e. the volume that is left behind after the patient has passed urine.

This measurement can be made by either using ultrasound or passing a catheter into the bladder. Finding more than 100ml of urine remaining after voiding indicates that the bladder is not emptying properly.

Intermittent self-catheterisation

People have varied responses to the suggestion that they should self-catheterise. Some say that they have heard of the technique and would like to try and see if it will help them. A few react with horror and fear. However, that response is often the result of false preconceived ideas. Fortunately, most people decide to try the technique once the fundamentals of pelvic anatomy have been explained (particularly important for women), reassurance given that it will not hurt, the small diameter of the catheter shown, the intermittent nature of the procedure emphasised and, best of all, when the technique has been demonstrated by a nurse continence adviser. Some find that discussion with someone who has already mastered the method can be very helpful.

ISC will help reduce bladder symptoms resulting from accumulating urine which cannot be eliminated naturally. This means that the procedure will benefit people with symptoms of difficulty voiding as well as those who have urinary frequency and urgency because their bladders are constantly nearly full.

Most people with MS are recommended to selfcatheterise two or three times a day and, if frequency at night is a particular problem, last thing before going to bed too. However, the patient will soon become the expert on how often he/she should carry out the procedure. Some find it necessary to catheterise four or six times in 24 hours but more frequently may mean that the bladder storage capacity is poor and more anticholinergic medication should be taken.

Most people with the will to do so can master the technique. Lack of motivation is probably the commonest cause of failure although there are some medical conditions that make it impossible. Poor hand function due to weakness or tremor is obviously a major difficulty. The nurse continence adviser at The National Hospital considers that if people can write and feed themselves, they probably have the necessary manual dexterity to self-catheterise. Leg spasms in women mean that it is difficult to part the thighs, but with appropriate management ISC may still be possible. Poor eyesight in either sex, however, does not seem to be a bar.

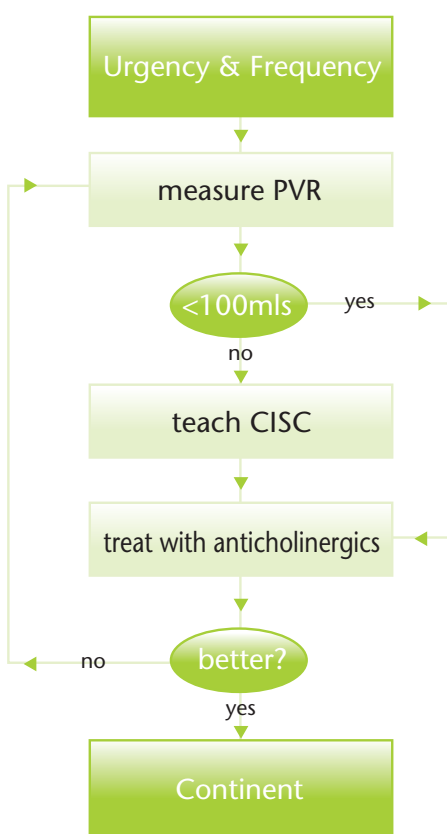
Some people with MS are unable to catheterise themselves and so their carers do it for them. This obviously requires a special relationship as well as aptitude on the part of the carer. Many carers have been surprised by their ability to carry out the procedure, despite having no nursing or medical background.

Figure 3:

Algorithm for management of neurogenic incontinence.

CISC = clean intermittent self-catheterisation⁸.

PVR = post void residual urine



Anxiety about introducing infection is common. In general, provided that instructions about hygiene, hand washing and keeping the catheter clean are followed, infections are not a major problem and may be reduced because stagnant urine is not allowed to accumulate. If recurrent infections are a problem, long-term, continuous, low dosage antibiotics are probably inadvisable as they encourage antibiotic-resistant germs to grow. It is better to have a full 5–7 day course of antibiotics on hand and, at the first symptoms of an infection (eg odour and colour of the urine, together with increased frequency or pain on passing urine), start taking the tablets. Ideally, a specimen of urine should be sent to the laboratory before starting antibiotics so that if the infection does not respond quickly, the sensitivity of the germs to different antibiotics is known. This means that the medication can be altered if necessary when the result becomes available 3–5 days later. Arrangements for this have to be made with the GP.

Symptoms, effects and management

Treatment for mild to moderate bladder symptoms

In summary, the best treatment for people with urgency and frequency who are known to be emptying their bladders completely is oral anticholinergic medication. For those who are emptying poorly and experience urgency, frequency and difficulty in voiding, the best combination is oral anticholinergic medication and regular ISC. These first-line measures may not suit everyone and fortunately other effective measures are available.

Bed-wetting and night-time urinary frequency

Bed-wetting and night-time urinary frequency are two of the worst problems associated with urinary impairment. For most people with MS, symptoms are helped significantly by taking an oral anticholinergic and carrying out ISC, particularly before going to bed. Sometimes, however, despite these measures, difficulties persist. If this is the case, desmopressin at night may be of great value as it reduces the amount of urine produced by the kidneys. Its action lasts for 3–6 hours and, despite its interference with what is a very necessary function, provided it is taken according to instructions, is safe. Desmopressin is usually taken orally (Table 1). It can be used during the daytime but it is essential that the user realises the possible dangers of retaining too much water if it is used more than once in 24 hours⁹.

Further measures

For some people the measures outlined above may not be effective, in which case another strategy is needed. These people tend to fall into two categories: those who are generally very incapacitated and unable to perform ISC and those who, although not severely disabled, have bladders which, because they are so overactive, have no storage capacity, despite high doses of anticholinergic medication. In the former group, a preliminary ‘open-label’ study (everyone knew that they were getting the active drug) of a cannabis-based medicinal extract, some improvement in urinary control was suggested¹⁰. In the meantime these very incapacitated patients benefit from an indwelling catheter either urethrally or preferably supra-pubically if it is going to be in long-term. In patients who are not so disabled but their bladder is not adequately controlled by first line measures, research is currently in progress to look at the effect of injecting botulinum toxin into the bladder wall. This treatment, first reported from Switzerland about 5 years ago¹¹, seems to be highly effective in reducing urgency and urge incontinence in patients with MS¹². However bladder emptying is almost always affected by this procedure so patients must be prepared to do clean intermittent self catheterization. The procedure can be done under local anaesthetic as an outpatient and the benefit seems to last for about 8 months.

Unfortunately it will be several years before the drug gets a license for this indication and in the meantime it can only be given by special arrangements.

Symptoms, effects and management

Conclusion

Bladder problems are a major difficulty for patients with MS, but a lot can be done to help. In the early stages oral anticholinergic medications alone may be enough but if spinal cord function deteriorates, intermittent self catheterization may be necessary. If those measures alone cease to work other possibilities must be considered and research on these alternatives is producing some encouraging results.

Table 1

Drugs used for urinary frequency, enuresis, and incontinence

Antimuscarinic drugs

Oxybutynin (Ditropan) 2.5 mgs bd
Oxybutynin (Lyrinel XL) 5mgs od

Tolterodine (Detrusitol) 2mgs bd
Tolterodine (Detrusitol XL) 4mgs od

Tropium hydrochloride (Regurin)
20mgs bd

Propiverine (Detrunorm)15mgs od
– tds

Darifenacin (Emselex) 7.5mgs &
15mgs od

Solifenacin (Vesicare)5 or 10 mgs
od

Drugs used to reduce urine output

Vasopressin analogue

Desmopressin acetate
(Desmotabs) 200 – 400
micrograms on

Desmopressin acetate Nasal spray
(Desmospray, Nocutil)10 – 40
micrograms on

Legend

Every drug has at least two names – the chemical or generic name and a name given it by the drug company, its proprietary or brand name.

od=once/day, on=once/night,
bd=twice/day, tds=three
times/day.

References

1. Miller H, Simpson CA, Yeates WK. Bladder dysfunction in multiple sclerosis. *Br Med J* 1965;5445:1265-69.
2. Betts CD, D'Mellow MT, Fowler CJ. Urinary symptoms and the neurological features of bladder dysfunction in multiple sclerosis. *J Neurol Neurosurg Psychiatry* 1993; 56(3):245-50.
3. Nortvedt MW, Riise T, Myhr KM et al. Reduced quality of life among multiple sclerosis patients with sexual disturbance and bladder dysfunction. *Mult Scler* 2001;7(4):231-35.
4. Chancellor MB, Blaivas GJ. Urological and sexual problems in multiple sclerosis. *Clin Neurosci* 1994;2(3-4): 189-95.
5. Andersson KE. Antimuscarinics for treatment of overactive bladder. *Lancet Neurol* 2004;3(1):46-53.
6. Lapedes J, Diokno AC, Silber SJ et al. Clean, intermittent self-catheterization in the treatment of urinary tract disease. *J Urol* 1972;107(3):458-61.
7. Winder A. Intermittent self-catheterisation. *Nurs Times* 2002;98(48):50.
8. Fowler CJ. Investigation of the neurogenic bladder. *J Neurol Neurosurg Psychiatry* 1996;60(1):6-13.
9. Tubridy N, Addison R, Schon F. Long term use of desmopressin for urinary symptoms in multiple sclerosis. *Mult Scler* 1999;5(6):416-17.
10. Brady CM, DasGupta R, Dalton C et al. An open-label pilot study of cannabis-based extracts for bladder dysfunction in advanced multiple sclerosis. *Mult Scler* 2004;10(4):425-33.
11. Schurch B, Stohrer M, Kramer G et al. Botulinum-A toxin for treating detrusor hyperreflexia in spinal cord injured patients: a new alternative to anticholinergic drugs? Preliminary results. *J Urol* 2000;164(1):692-97.
12. Reitz A., Stohrer M, Kramer G et al. European experience of 200 cases treated with botulinum-A toxin injections into the detrusor muscle for urinary incontinence due to neurogenic detrusor overactivity. *Eur Urol* 2004;45(4):510-15.

Further Reading Publications from the MS Trust*

▶ For people with MS

MS: what does it mean for me? - For people newly diagnosed with MS, a practical introduction to MS to help answer questions at a time of uncertainty.

MS together - A DVD that offers clear and concise information on MS.

Disease modifying drug therapies - A general guide to people with MS that covers disease modifying drug therapies licensed for use in the UK.

At work with MS: managing life and work - Elements that make for a successful working life when someone has MS and considers the support available to both the person with MS and the employer.

Living with fatigue - Offers advice on how to live with fatigue, one of the commonest symptoms of MS.

MS Explained - A guide to the mechanisms of the disease.

Sexuality and MS - a guide for women - Explains how MS can impact on sexuality and intimacy and offers positive practical solutions.

Young person's guide to MS - For young people aged 10-15 who have a parent with MS.

Exercises for people with MS - Exercises from a senior physiotherapist illustrated throughout by easy to follow diagrams and on DVD in **Move it for MS**.

Move it for MS - A DVD of exercises for people with MS.

Factsheets covering a wide range of symptoms and therapies - for further details and to order any of the publications contact the MS Trust Information team 01476 476 700 email infoteam@mstrust.org.uk.

▶ For health and social care professionals

Spasticity care pathway - The role of the nurse in the management of spasticity

Therapists in MS: delivering the long-term solutions

Comprehensive resources are available to download from our website www.mstrust.org.uk.

* As of November 2007

Publications

We hope that you have found this information helpful. The MS Trust offers a wide range of publications, including our quarterly newsletter Way Ahead and the MS Information Update. These provide details of latest developments and recently published papers in the field of MS. Our website is regularly updated www.mstrust.org.uk

Contact us to receive our newsletter or to request another publication. All our services are free within the UK.

MS Trust Information Service

The MS Trust Information Service is here to answer YOUR questions about MS. To contact us you can:



phone

01462 476700 (Lines are open Monday – Friday 9am-5pm)



email

infoteam@mstrust.org.uk



write

MS Trust, Spirella Building,
Letchworth Garden City, Herts, SG6 4ET

Publications

We hope that you have found this information helpful. The MS Trust offers a wide range of publications, including our quarterly newsletter Way Ahead and the MS Information Update. These provide details of latest developments and recently published papers in the field of MS.

All our services are free within the UK.

Contact us to receive our newsletter or to request another publication.

MS Trust Information Service

The MS Trust Information Service is here to answer any questions that YOU or the people who have MS that you work with may have about MS. To contact us you can:



Phone

01462 476 700

(lines are open Monday to Friday 9am to 5pm)



Email

infoteam@mstrust.org.uk



Write

MS Trust
Spirella Building
Letchworth Garden City
Herts
SG6 4ET

Published in the United Kingdom by

MS Trust,
Spirella Building, Bridge Road,
Letchworth Garden City,
SG6 4ET

Tel: 01462 476700

Email: info@mstrust.org.uk
Website: www.mstrust.org.uk

Registered charity no 1088353
© 2007 Multiple Sclerosis Trust

MS Trust
Multiple sclerosis information for Health and
Social Care Professionals
ISBN 1-904156-14-2
© 2007 Multiple Sclerosis Trust

Published: November 2007

All rights reserved. No part of this book may be reproduced, stored in a retrieval system of transmitted in any form by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise without the written permission of the publisher.