



Correlation between bladder and bowel issues in multiple sclerosis

Multiple Sclerosis (MS) is a disease in which the insulating covers (myelin sheaths) of nerve cells in the brain and spinal cord are damaged by attacks from the immune system. This causes communication problems between the brain and the rest of the body.

These damages may affect different bodily functions such as motor and sensory impairment and as time passes 75-90% (1) of patients will develop bladder problems such as overactive bladder, detrusor sphincter dyssynergia and retention, and up to 70% may develop bowel problems such as constipation or faecal incontinence (2).

**75-90% of MS patients
develop bladder problems**



**Up to 70% of MS
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Bladder and Bowel

There are several studies which have investigated potential synergies between bowel and bladder function. A study by Cameron et al 2014 including 175 patients (18.3% MS patients) with neurogenic bladder (3) investigated how the severity of bowel dysfunction correlates with the severity of bladder dysfunction. As hypothesized, patients with neurogenic bowel dysfunction (NBD) symptoms had worse urinary incontinence and urinary tract symptoms.

Sampaio et al (2016)(4) have also demonstrated that constipation is associated with urinary dysfunction and overactive bladder (OAB). In a study by Loening-Baucke V. 1997 (5), it was demonstrated that by treating constipation symptoms, urinary incontinence was significantly improved (daytime and night-time) and the number of re-occurring urinary tract infections (UTIs) was significantly decreased.

Anatomically, the rectum and bladder are very closely located and share several neurological pathways, which according to Sampaio et al 2016, might explain the association found between bowel dysfunction and lower urinary tract dysfunction (LUTD) (4).

Other explanations for the correlation between bowel and bladder function include contraction of the anal sphincter. The anal sphincter contracts when a person experiences urgency to defecate, which may cause

contraction of the urethral sphincter and thereby reflexively inhibit bladder function. This can also occur the other way around, as contraction of the urethral sphincter, occurring when there is an urgency to urinate, may inhibit defecatory function (4).

Constipation can also directly alter bladder function by causing a distending pressure of the rectum (fecal impaction) on the bladder wall, which as a result can cause obstructed urine flow and bladder detrusor function impairment (4, 6).

Reduction in urinary tract infections by treating bowel problems

There are several studies which investigate the correlation between treatment of bowel dysfunction and the frequency of UTIs. In a study by Kennelly et al 2019 (6), NBD symptoms were treated with transanal irrigation (TAI), which resulted in a three-fold reduction of the number of experienced UTIs. The authors speculate that the bowel management technique (TAI), which resulted in fewer faecal incontinence accidents, ultimately caused less bacterial contamination, as gut microflora and microbial metabolites can influence the urinary microbiota, explaining the decrease in UTIs (6).

In a study by Passananti et al 2016, TAI was used to treat NBD in an MS cohort (7). The TAI treatment reduced the annual number of experienced UTIs by 54% and decreased the number of hospital visits. According to Kennelly et al 2019, optimal bowel treatment of NBD should go hand in hand with proper bladder management, and all new UTI cases should result in holistic assessment of the patient's situation, including overall health, mobility, bladder situation and bowel function (6).

The effect of anticholinergics on bladder/bowel

Some of the medication used to treat MS related symptoms may have side effects that can affect how the bladder or bowel works. Anticholinergics that are used to treat many patients with overactive bladder can potentially induce constipation. The reason for this is that anticholinergics, also known as antimuscarinic drugs, inhibits the binding of the neurotransmitter acetylcholine to the muscarinic receptors in the bladder (see Figure 1).

However, the same receptors are also found other places in the body like bowel and heart. New anticholinergic medicine is targeting only the M3 muscarinic receptor specifically, thus avoiding the M2 receptors also found in the heart, eliminating side effects such as tachycardia, but the bowel is still affected by reducing the peristaltic movements, which may induce constipation.

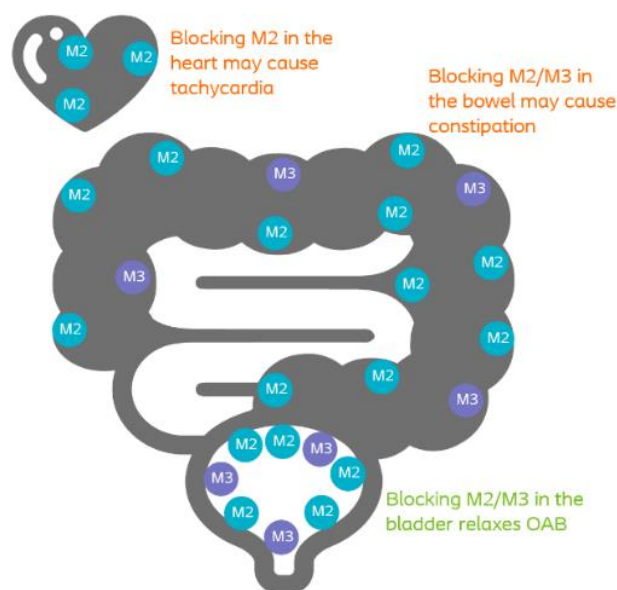


Figure 1. Positive (green) and negative (orange) impact of anticholinergic medicine on heart, bladder, and bowel.

A holistic view

Unfortunately, many patients are not aware of the link between MS and their bladder and bowel issues and often the patient's primary point of contact is a neurologist, who often focus on other symptoms than bladder and bowel problems. The result is that many patients do not have their problems assessed in a timely manner.

A study has shown that a multidisciplinary management of urinary disorders in MS on average will diagnose bladder problems three years earlier resulting in fewer complications including UTIs (8). Febrile UTI may increase risk of a transient worsening of the disability (9), thus, it is paramount that bladder and bowel problems are treated in a timely manner.

References

1. www.msif.org/wp-content/uploads/2014/09/MS-in-focus-24-Bladder-and-bowel-issues-English.pdf.
2. Alvino B, Arianna F, Assunta B, Antonio C, Emanuele D, Giorgia M, et al. Prevalence and predictors of bowel dysfunction in a large multiple sclerosis outpatient population: an Italian multicenter study. *J Neurol*. 2022;269(3):1610-7.
3. Cameron A P RGM, Gursky A, He C, Clemens J Q, Stoffel J T. The Severity of Bowel Dysfunction in Patients with Neurogenic Bladder. *Journal of Urology, The*. 2014;194(5):6.
4. Sampaio C, Sousa AS, Fraga LG, Veiga ML, Bastos Netto JM, Barroso U, Jr. Constipation and Lower Urinary Tract Dysfunction in Children and Adolescents: A Population-Based Study. *Front Pediatr*. 2016;4:101.
5. Loening-Baucke V. Urinary Incontinence and Urinary Tract Infection and Their Resolution With Treatment of Chronic Constipation of Childhood. *Pediatrics*. 1997;100(2):5.
6. Kennelly M, Thiruchelvam N, Averbeck MA, Konstatinidis C, Chartier-Kastler E, Trojgaard P, et al. Adult Neurogenic Lower Urinary Tract Dysfunction and Intermittent Catheterisation in a Community Setting: Risk Factors Model for Urinary Tract Infections. *Adv Urol*. 2019;2019:2757862.
7. Passananti V, Wilton A, Preziosi G, Storrie JB, Emmanuel A. Long-term efficacy and safety of transanal irrigation in multiple sclerosis. *Neurogastroenterol Motil*. 2016;28(9):1349-55.
8. Castel-Lacanal E, Game X, Clanet M, De Boissezon X, Brassat D, Rischmann P, et al. Assessment of a program to encourage the multidisciplinary management of urinary disorders in multiple sclerosis. *Neurourol Urodyn*. 2017;36(3):706-9.
9. Donze C, Papeix C, Lebrun-Frenay C, French Group for Recommendations in Multiple S, Societe francophone de la sclerose en p, Spilf, et al. Urinary tract infections and multiple sclerosis: Recommendations from the French Multiple Sclerosis Society. *Rev Neurol (Paris)*. 2020;176(10):804-22.