Anorectal Dysfunction in Patients with Urologic Disturbance Due to Multiple Sclerosis

Michael Sørensen, M.D., Marianne Lorentzen, M.D., Jørgen Petersen, M.D., John Christiansen, M.D., Ph.D.

From the Department of Surgery D and Department of Neurology N, Glostrup Hospital, University of Copenhagen, Copenhagen, Denmark

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Anorectal function was evaluated in 11 patients with voiding dysfunction due to multiple sclerosis. In six patients with constipation, three also had symptoms of obstructed defecation and one patient was incontinent due to stercoral diarrhea. One patient was only fecal incontinent and one patient had obstructed defecation as the only symptom. Three patients had no anorectal symptoms. Anal manometry in the women compared with a control group revealed significant lower anal resting and squeeze pressures, although no significant difference of rectal sensation to distention with air was found. Pudendal nerve terminal latencies were obtained in seven patients and were all normal. In four patients latency could not be demonstrated due to poor contraction of the sphincter on stimulation of the pudendal nerve. Two of these patients were incontinent and two had both constipation and obstructed defecation. It is concluded that patients with voiding symptoms due to multiple sclerosis often reveal anorectal symptoms or motility disorders. Although anal sphincter function is reduced, fecal incontinence is not prevalent in this group. The reason for this lies probably in the fact that many of the patients are constipated, thus securing fecal continence. [Key words: Multiple sclerosis; Constipation; Fecal incontinence]

Patients with multiple sclerosis often have bladder dysfunction.[1,2] It has only recently been recognized that these patients also frequently have defecation disorders.[3] Also colonic dysfunction in form of constipation and abnormal myoelectric activity in patients with multiple sclerosis has been described.[4,5]

The pudendal nerve supplies the bladder and urethral sphincter as well as the anal sphincter and the pelvic floor muscles.[6] Disturbance of both voiding and defecation is thus likely to occur. The aim of the present study was to evaluate anorectal function in patients with neuropathic bladder disorder due to multiple sclerosis.

Address reprint requests to Dr. Christiansen: Department of Surgery D, Glostrup Hospital, DK-2600 Copenhagen, Denmark.
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MATERIALS AND METHODS

Eleven patients, three males and eight females, with definite multiple sclerosis according to recommended diagnostic criteria,[7] were studied. The median age was 52 years (range 29–59). The median duration of the disease was 14 years (range 2–26).

All patients had neuropathic bladder disorder, seven had detrusor hyperreflexia, and four patients had detrusor areflexia. Five patients had residual urine (40–250 ml) and two needed continuous bladder drainage. Four patients suffered from urge incontinence, one had stress incontinence, and two had outlet obstruction due to stricture of the urethra or detrusor-sphincter dyssynergia. Voiding symptoms and urodynamic findings for all the patients are shown in Table 1. Twelve women and nine men with no history of multiple sclerosis and no anorectal or bladder dysfunction served as controls of anorectal measurements.

Anal Manometry

Investigations were performed with patients in the left lateral position with knees and hips flexed. Maximum resting and maximum squeeze pressures were measured with a low-compliance open-ended perfused polyvinyl catheter connected to a strain gauge and displayed on a chart recorder. The details of this technique have been described previously.[8]

Table 1.
Urodynamic Results and Bladder Symptoms

Patient No.	Sex	Urodynamic Results		Bladder Symptoms		
		Detrusor Hyperreflexia	Detrusor Areflexia	Urge Incontinence	Stress Incontinence	Obstructed Voiding
1	F	No	Yes	−	−	+
2	M	Yes	No	+	−	−
3	F	Yes	No	−	−	−
4	F	No	Yes	−	+	−
5	F	Yes	No	+	−	+
6	M	No	Yes	−	−	−
7	M	Yes	No	+	−	−
8	F	Yes	No	+	−	−
9	F	No	Yes	+	−	+
10	F	Yes	No	−	−	+
11	F	Yes	No	+	−	−

Rectoanal Inhibitory Reflex

The pressure catheter was placed in the high pressure zone of the anal canal. A latex balloon 5 × 3 cm when deflated was placed in the rectum with the center of the balloon 10 cm from the anal verge. Presence of the rectoanal inhibitory reflex was noted when inflation of 50 ml of air to the balloon, resulted in a fall of anal pressure of more than 5 mm Hg for more than 15 sec. If no reflex was present, inflation of air was continued in steps of 50 ml until the reflex was demonstrated or the patient complained of discomfort.

Rectal Sensation

Rectal sensation to distention was tested by continuous filling of the rectal balloon with air at a rate of 75 ml/min. The patients were instructed to report when they experienced: 1) need to defecate, 2) constant urge to defecate, and 3) the maximum tolerable volume that resulted in discomfort or painful urge to defecate. The rectal volume at each sensation was recorded.

Pudendal Nerve Terminal Latency

Investigations were performed with the patient in the lithotomy position. The pudendal nerve was stimulated on both sides at the point of the ischial spine using a disposable pudendal nerve electrode, Dantec 13L40.[9] The signal from the stimulus and the resulting anal EMG was recorded on a Neuromatic 2000 M/C electromyograph (Dantec, Copenhagen).

Table 2.
Anorectal Symptoms

Patient No.	Constipation	Fecal Incontinence	Obstructed Defecation
1	−	−	+
2	−	−	−
3	−	−	−
4	+	−	+
5	+	−	+
6	+	+	−
7	−	+	−
8	+	−	−
9	+	−	+
10	−	−	−
11	+	−	−

RESULTS

The anorectal symptoms are shown in Table 2. Six patients had constipation; of these three also had symptoms of obstructed defecation and one was incontinent due to stercoral diarrhea. Of the last five patients, one patient was incontinent and one had obstructed defecation as the only symptom, and three had no anorectal symptoms.

Anal manometry in the women with multiple sclerosis compared with control subjects revealed significant lower anal pressures both at rest ($P < 0.02$) and during squeeze ($P < 0.001$) (Table 3), whereas the men with multiple sclerosis had anal pressures within normal range. Rectal sensation to distention with air was lower for the patients although not significant ($P = 0.21$) (Table 3).

Pudendal nerve terminal latencies obtained in seven patients were all normal. None of these patients were incontinent but two had obstructed

Table 3.
Anal Manometry and Rectal Sensation to Distension with Air

	Women		Men	
	Multiple Sclerosis	Normal	Multiple Sclerosis	Normal
	Median (Range)	Median (Range)	Median (Range)	Median (Range)
Anal manometry				
Resting pressure (mm Hg)	52 (10–77)*	72 (45–121)	73 (49–81)	68 (32–82)
Squeeze pressure (mm Hg)	60 (33–96)*	150 (81–320)	143 (95–160)	200 (64–264)
Rectal Sensation				
UD (ml)	74 (38–404)†	96 (51–300)	120 (34–259)	154 (80–272)
CUD (ml)	110 (77–430)†	151 (55–355)	164 (91–285)	205 (119–320)
MTV (ml)	145 (110–450)‡	220 (100–320)	300 (200–520)	330 (160–400)
Pudendal nerve terminal latency (ms)	1.6 (1.0–2.2)†	1.4 (0.8–2.1)		

* $P < 0.02$ (Mann-Whitney U test).
† $P > 0.5$ (Mann-Whitney U test).
‡ $P < 0.22$ (Mann-Whitney U test).
UD = urge to defecate; CUD = constant urge to defecate; MTV = maximum tolerable volume.

defecation. In four patients it was not possible to measure the pudendal nerve terminal latency, due to poor anal sphincter contraction on stimulation of the pudendal nerve. Two of these patients were incontinent and two had both constipation and obstructed defecation. Anorectal inhibitory reflex was only present in five patients.

DISCUSSION

This study indicates that anorectal dysfunction is prevalent in patients with multiple sclerosis and neuropathic bladder disorder. Constipation was the most prominent symptom, which confirms results presented previously.[4,5] Myoelectrical studies have shown abnormal postprandial response as well as abnormal motor activity in patients with multiple sclerosis. Visceral neuropathy has been suggested as the cause of this abnormal activity resulting in constipation.[5,10] Maximum tolerable volume was found to be lower, although not significantly. This corresponds with other findings of decreased compliance in the rectosigmoid of these patients. Muscular atrophy and fibrosis of the large intestine has been suggested as the cause.[11] The rectoanal inhibitory reflex could not be elicited in six patients, whether this is due to visceral neuropathy in the rectosigmoid is not clear.

Peripheral nerve damage seems to be partly responsible for the anorectal symptoms in patients with multiple sclerosis. In this study only a few patients were examined, but the results indicate that pudendal nerve damage may aggravate the symptoms.

Although pudendal nerve damage as the cause of incontinence in patients with multiple sclerosis has been reported,[3] fecal incontinence was not prevalent in this study. This is surprising because anal manometry revealed low anal resting and squeeze pressures in the female patients compared with normals. This is in contrast to findings in patients operated for spina bifida where incontinent patients had lower anal resting and squeeze pressures.[12]

None of the women studied had fecal incontinence, but the five women with the lowest pressure profiles all had constipation, indicating that constipation may be a part of the continence mechanism in these patients.

In conclusion, the results of this study indicate that anorectal symptoms or disturbance of anorectal motility is prevalent in patients with multiple sclerosis. Many of these patients have constipation and it is likely that this secures fecal continence in spite of anal sphincter dysfunction.

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