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CASE CONTROL STUDY

Fecal incontinence in men: Causes and clinical and manometric features

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Abstract

AIM: To determine the causes and characteristics of fecal incontinence in men and to compare these features with those presented by a group of women with the same problem.

METHODS: We analyzed the medical history, clinical and manometric data from 119 men with fecal incontinence studied in our unit and compared these data with those obtained from 645 women studied for the same problem. Response to treatment was evaluated after 6 mo of follow-up.

RESULTS: Fifteen percent of patients studied in our unit for fecal incontinence were male. Men took longer than women before asking for medical help. Ano-rectal surgery was the most common risk factor for men related to fecal incontinence. Chronic diarrhea was present in more than 40% of patients in both groups. Decreased resting and external anal sphincter pressures were more frequent in women. No significant differences existed between the sexes regarding rectal sensitivity and recto-anal inhibitory reflex. In 17.8% of men, all presenting soiling, manometric findings did not justify fecal incontinence. Response to treatment was good in both groups, as 80.4% of patients improved and fecal incontinence disappeared in 13.2% of them.

CONCLUSION: In our series, it was common that men waited longer in seeking medical help for fecal incontinence. Ano-rectal surgery was the major cause of this problem. Chronic diarrhea was a predisposing factor in both sexes. Manometric differences between groups were limited to an increased frequency of hypotony of the external anal sphincter in women. Fecal incontinence was controllable in most patients.

Key words: Fecal Incontinence; Gender; Ano-rectal surgery; Ano-rectal manometry; Treatment; Biofeedback

Core tip: In our series of 119 men and 645 women with fecal incontinence, it was common that men waited longer in seeking medical help for fecal incontinence. Ano-rectal surgery was the major cause of this problem in men. Diarrhea was a predisposing factor in both sexes. Manometric differences between groups were

limited to an increased frequency of hypotony of the external anal sphincter in women. Fecal incontinence was controllable in most patients.

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INTRODUCTION

Fecal incontinence (FI) is defined as the involuntary and recurrent loss of feces through the anus. It represents a clinical condition that may significantly alter both physically and mentally the quality of life of patients[1-2]. It is a problem that affects between 1.4% and 15.3% of the general population[3]. Classically, it has been considered that FI affects mainly women due to the anal lesions produced during childbirth[4]; however, differences between the sexes decrease with age[5], and some studies maintain that prevalence is similar in both genders[3,6]; though in men, it seems to have some special characteristics[7,8].

Relatively few studies have been published on FI that focus specifically on men[7-11]. Therefore, the purpose of the present study was to determine the causes, clinical and manometric characteristics of FI in men and to compare these features with those found in a group of women studied for the same disorder.

MATERIALS AND METHODS

Between May 1998 and May 2010, 764 patients (119 men and 645 women) with FI were studied in our unit following a previously established protocol. This protocol included demographic data, medical history, risk factors for FI, results of physical examination, manometric studies, and response to treatment. Informed consent was obtained according to the institutional regulation. The retrospective analysis of these data was approved by the local ethics Committee. Characteristics of FI in men were compared with those presented by the female group with the same problem. Inclusion criterion was the presence of FI defined as the involuntary and recurrent loss of feces through the anus[3]. FI was categorized as (1) passive when stool discharge occurs involuntary without awareness of the desire to defecate; (2) soiling or fecal seepage when the leakage of stool occurs following otherwise normal evacuation; and (3) urge when the patient was unable to voluntarily contract the external anal sphincter (EAS) and to prevent loss of feces[12]. Severity of FI was quantified using the Wexner score[13], considering FI as mild when the score was under 10 and severe when this score was 10 or more[14]. In all cases, a detailed assessment of the past medical and surgical history was made. No patient included in this study suffered from acute diarrhea. All patients included in the study were living in the community.

After obtaining written informed consent, examination of the anal region in the left lateral decubitus position was performed to detect scars, rectal prolapses, hemorrhoids, fissures, fistulas, stenosis or deformities. The degree of voluntary anal contraction was evaluated by digital examination of the rectum[11].

The manometric study was carried out with a manometry equipment from Synetics Medical (Stockholm, Sweden), and following the procedure described elsewhere[15,16]. After obtaining the results of the diagnostic tests performed, we indicated the most appropriated treatment[1,15,17], usually consisting of hygienic and dietary measures, the use of bulking agents, loperamide or eventually, laxatives, and rectal cleansing. In 39 female patients with EAS hypotony, biofeedback was performed. In refractory cases, nerve electrostimulation, anal plugs or surgery were used.

Patients were clinically evaluated over a six months period. Clinical outcome was defined as satisfactory if the Wexner score after treatment was between 0 and 5, fair between 6 and 10, and poor if the Wexner score was 10 or more[18]. After this time, if no improvement was obtained, other treatments were considered.

Statistical analysis

All results were expressed as mean ± SD and percentages. The Statistical analysis was carried out using the SPSS 13.0 statistical package (SPSS, Inc., Chicago, IL). The unpaired *t* test and the Snedecor's F distribution were used to assess the significance of differences between means. The significance of differences between percentages and the association between clinic-pathological factors was calculated using the χ^2 test. *P* values < 0.05 were considered significant.

RESULTS

Frequency, severity and type of FI

Seven hundred sixty four patients were studied in our unit for FI between May 98 and May 2010 of which 119 (15.5%) patients were men. Their age ranged from 18 to 87 years (mean, 57.3 ± 14.7 years), which was not significantly different from the age range in women (range, 19-86 years; mean, 58.2 ± 16.4 years; NS). Men with FI took longer to seek medical assistance than women. Thus, while the mean time for women to consult a doctor was 23.7 ± 18 mo, this time was 37.6 ± 36.6 mo ($P < 0.001$) for men.

In men, FI was classified as moderate to severe (71.4%) more frequently than in women (41.5%; $\chi^2 = 17.2$; $P < 0.001$). In fact, the Wexner score was 11.9 ± 4.3 for men and 8.3 ± 3.5 for women ($P < 0.001$). In men, the severity of FI was negatively correlated with the time patients took to seek medical attention ($r = -0.5$; $P = 0.001$). This time was 13.2 ± 8.5 mo for men with severe FI and

Table 1 Previous medical history of patients with fecal incontinence *n* (%)

	Ano-rectal Surgery	Chronic Diarrhea					Hemorrhoids
		Total	IBD	Irritable Intestine syndrome	Others[1]	Radiotherapy	
Total (n = 764)	190 (24.9)	339 (44.4)	72 (9.4)	107 (14.0)	138 (18.1)	22 (2.9)	35 (4.6)
Men (n = 119)	46 (38.6)	50 (42.0)	10 (8.4)	11 (9.2)	24 (20.2)	5 (4.2)	7 (5.9)
Women (n = 645)	144 (22.3)	289 (44.8)	62 (9.6)	96 (14.9)	114 (17.7)	17 (2.6)	28 (4.3)
χ^2 (P value)	5.72 (< 0.001)	0.16 (NS)	0.09 (NS)	1.99 (NS)	0.96 (NS)	0.39 (NS)	0.26 (NS)
	Epidermoid Carcinoma	**Constipation**	**Prolapse**	**Obstetric**	**None**	**Several risk factors**	**Neurological disease**
Total (n = 764)	1 (0.4)	138 (18.1)	12 (1.6)	375 (49.1)	75 (9.8)	401 (52.5)	39 (5.1)
Men (n = 119)	1 (0.8)	20 (16.8)	2 (1.7)	0 (0.0)	8 (6.7)	34 (28.6)	16 (13.4)
Women (n = 645)	0 (0.0)	118 (18.3)	10 (1.5)	375 (58.1)	67 (10.4)	367 (56.9)	23 (3.6)
χ^2 (P value)	0.8 (NS)	0.08 (NS)	0.01 (NS)	81.9 (< 0.001)	0.87 (NS)	16.36 (< 0.0001)	6.17 (< 0.01)

[1]Other causes of chronic diarrhea (men, women): Billroth Ⅱ gastrectomy (2, 11); Cholecystectomy (3, 26); Small bowel resection (0, 2); Celiac disease (3, 13); Whipple's disease (0, 1); Giardia lamblia (1, 8); Pancreatic insufficiency (2, 9); Collagenous colitis (2, 5); Food intolerance (1, 4); Small intestinal bacterial overgrowth (7, 12); Undetermined cause (3, 23). NS: Not significant; IBD: Inflammatory bowel disease.

Table 2 Previous ano-rectal surgery in patients with fecal incontinence *n* (%)

Indications for ano-rectal surgery	Men	Women	χ^2	*P*
Hemorrhoids	9 (7.6)	26 (4.0)	1.18	NS
Ulcerative colitis	2 (1.7)	9 (1.4)	0.03	NS
Crohn's disease	2 (1.7)	12 (1.8)	0.003	NS
Rectal cancer (Low anterior resection)	12 (10.1)	16 (2.4)	5.06	< 0.05
Abscess	8 (6.7)	23 (3.5)	1.06	NS
Anal atresia	3 (2.5)	15 (2.3)	0.001	NS
Colorectal cancer	2 (1.7)	9 (1.4)	0.03	NS
Fistula	4 (3.4)	19 (1.4)	0.854	NS
Fissure	2 (1.7)	6 (0.9)	0.006	NS
Rectal prolapse	1 (0.8)	3 (0.5)	0.07	NS
Prostate cancer	1 (0.8)	0 (0.0)	0.8	NS
Anal dilatation	0 (0.0)	6 (0.9)	0.9	NS
Total	46 (38.6)	144 (22.3)	5.72	< 0.05

NS: Not significant.

103.0 ± 53.6 mo for those with mild FI (P < 0.001). On the contrary, among women, differences between these times were not significant (mild, 29.3 ± 30.4 mo; severe, 26.9 ± 33.2 mo; NS) and they did not correlate with the severity of FI (r = -0.124; P = 0.212). There were some differences between men and women concerning the type of FI. Thus, FI was classified as passive in 20.2% of men and 16.3% of women (χ^2, NS); soiling was 21.0% for men and 5.0% for women (χ^2, P < 0.001), urge was 47.9% for men and 57.7% for women (χ^2 = 1.92; NS), and mixed type was 6.1% for men and 16.6% for women (χ^2 = 5.48; P < 0.05). Urge was particularly frequent in women with obstetric risk factors (ORF) (ORF, 60.3%; no ORF, 33.3%; χ^2 = 14.64; P < 0.001), followed by the mixed type (ORF, 30.0%; no ORF, 23.5%; χ^2 = 1.08; NS). The passive type was significantly less frequent (9.0%) in women with ORF than in those without these factors (37.1%; χ^2 = 22.3; P < 0.0001). In 4.2% of men and 4.0% of women, the type of FI was not classified (χ^2 = 0.005; NS).

In men who underwent ano-rectal surgery, the dominant type of FI was urge (passive, 10.8%; seepage, 28.3%; urge, 47.8%; mixed, 10.8%; χ^2 = 50.8, P < 0.0001). The time taken by men to seek medical assistance was associated with the type of FI (χ^2 = 85.5; P = 0.0001). Indeed, these times were 70.9 ± 52.5, 48.5 ± 39.3, 21.8 ± 42.1, and 13.9 ± 9.6 mo for men with passive, soiling, urge, and mixed type of FI, respectively (Snedecor's F = 3.8; P = 0.006). In women, these times were 29.3 ± 58.3, 31.0 ± 27.5, 25.3 ± 22.5, and 22.1 ± 14.4 mo when FI was passive, soiling, urge, and mixed, respectively (Snedecor's F = 0.9; NS).

Medical history

Among the medical history that could be related to FI, we did not find many differences between the two groups of patients (Table 1). A past history of ano-rectal surgery was significantly more frequent in men than in women (37.8% *vs* 22.3%; χ^2 = 5.72; P < 0.05), while ORF were the most common causes associated with FI in women (58.1%). Indications for anorectal surgery are listed in Table 2. In all patients with neurological diseases, constipation coexisted with FI. Frequency of chronic diarrhea, constipation, hemorrhoid surgery, inflammatory bowel disease (IBD), rectal prolapse, and radiotherapy were similar in both groups of patients (Table 1). There was no significant difference in the percentage of patients in whom no medical history was found to justify FI (6.7% *vs* 10.4%; χ^2 = 0.87; NS). Chronic diarrhea was present in 42.0% of men and 44.8% of women. In 8.4% of men and 9.6% of women (χ^2 = 0.08; NS), diarrhea was caused by IBD (Table 1). More than one cause of FI was found in 28.6% of men and 56.9% of women (χ^2 = 16.4; P < 0.001). ORF were present in 86.9% of women with several risk factors.

Ano-rectal examination

Inspection of the anal region revealed pathological changes in 28 men (23.5%) and 283 women (43.9%; χ^2 = 8.98; P < 0.01), particularly scars secondary to childbirth (221 patients).

Digital examination of the anal canal showed that the tone of the external anal sphincter (EAS) during vol-

Table 3 Ano-rectal manometry *n* (%)

Resting pressure	**Normal (60-80 mmHg)**	**Decreased (< 50 mmHg)**	**Increased (> 80 mmHg)**
Total (n = 763)	333 (43.6)	373 (48.9)	57 (7.5)
Men (n = 118)	65 (55.1)	42 (35.6)	11 (9.3)
Women (n = 645)	268 (41.5)	331 (51.3)	46 (7.1)
χ^2 (P value)	3.70 (NS)	5.02 (< 0.05)	0.32 (NS)
External anal sphincter pressure	**Normal (> 120 mmHg)**	**Decreased (< 120 mmHg)**	
Total (n = 763)	322 (42.2)	441 (57.8)	
Men (n = 118)	92 (78.0)	26 (22.0)	
Women (n = 645)	230 (35.6)	415 (64.3)	
χ^2 (P value)	64.4 (< 0.001)	35.7 (< 0.001)	
Rectal sensitivity	**Normal**	**Decreased**	**Increased**
Total (n = 763)	393 (51.5)	97 (12.7)	273 (35.8)
Men (n = 118)	54 (45.8)	29 (24.6)	35 (29.7)
Women (n = 645)	339 (52.6)	68 (10.5)	238 (36.9)
χ^2 (P value)	0.92 (NS)	6.87 (<0.01)	1.17 (NS)
Recto-anal inhibitory reflex	**Normal (20-30 mL)**	**Decreased or absent (> 60 mL)**	**Increased (< 10 mL)**
Total (n = 763)	614 (80.5)	69 (9.0)	80 (10.5)
Men (n = 118)	102 (86.4)	10 (8.5)	6 (5.1)
Women (n = 645)	515 (79.8)	59 (9.1)	71 (11.0)
χ^2 (P value)	1.55 (NS)	0.02 (NS)	2.35 (NS)

NS: Not significant.

untary anal contraction was often decreased, mainly in women. While this tone was low only in 26.1% of men, it was decreased in 69.15% (χ^2 = 37.1; P < 0.0001) of women. This reduced pressure was significantly associated with previous ORF in women (χ^2 = 8.04; P < 0.01).

Ano-rectal manometry

Manometry demonstrated that the resting pressure was more frequently decreased in women (51.3%) than in men (35.6%; χ^2 = 5.0; P < 0.05) (Table 3). In 11 men, manometry revealed that this tone was increased. In six of these men, all with fecal soiling, leakage was associated with the presence of hemorrhoids. Contrary to men, 81.2% of women with soiling had decreased EAS pressure. Anal manometry confirmed what the digital examination had already appreciated in women, *i.s.* that EAS tone was more frequently decreased (64.3%) compared to men (22.0%; χ^2 = 36.5; P < 0.0001) and that this change was usually associated with ORF (χ^2 = 79.13; P < 0.0001). The study of rectal sensitivity by distension with a pneumatic balloon demonstrated normal response in 51.5% of patients, decreased (hyposensitivity) in 12.7%, and increased (hypersensitivity) in 35.8%, but differences between both sexes were not significant, except for the case of hyposensitivity that was more common among men (Table 3). These changes were related to the type of FI (χ^2 = 80.47; P < 0.0001). In men, an increased rectal sensitivity was more frequent in patients with diarrhea (60.5%), ano-rectal surgery (39.5%), and IBD (15.8%). In women, rectal hypersensitivity was more frequent in the presence of ORF (53.9%) or diarrhea (49.8%), the latter caused by IBD in 71.3% of cases. Rectal sensitivity was mainly decreased in men with neurological diseases (47.8%) or constipation (55.0%). In women, rectal sensitivity was mostly decreased in patients with neurological lesions (45.4%), constipation (29.7%), or ORF (17.6%). The recto-anal inhibitory reflex (RAIR) was usually normal (80.5%), but was decreased or absent in 9.0% and increased in 10.5% of cases; however, differences between women and men were not significant (Table 3).

In 97 patients (12.7%) with FI, 21 men (17.8%) and 76 women (11.8%; χ^2 = 1.43; NS), manometric studies were normal. In men, the most frequent factor associated with FI and normal manometry was diarrhea (66.7%), caused by IBD in 14.3% of cases. Chronic diarrhea (42.1%) and ORF (31.6%) were the most common causes of FI found among women with normal manometry. In both sexes, the most frequent type of FI found in patients with normal manometry was urge (men, 71.4%; women, 73.7%; χ^2 = 0.13; NS). In five men (4.2%), there was no previous medical or surgical history or manometric changes to justify FI. In four of them with fecal soiling, the resting pressure was increased. In three of these cases, because of hemorrhoids.

All patients with FI were treated based on the results obtained from our diagnostic process. We had information on the response to the treatment in 83 out of 119 men and 536 out of 645 women. Thirty-six men and 109 women were not followed-up in our unit, and we have no information on their response to treatment**.** Patients were treated in a stepwise approach according to the response. Patients with diarrhea (29 men; 238 women) were treated with: (1) dietary modification and loperamide; (2) resin cholysteramine or codeine phosphate (5 men; 26 women); (3) otilonium bromide (3 men; 22 women); and (4) amitriptyline (3 men; 21 women). Patients with constipation were started with (1) a fiber-rich diet and a bulking agent (plantago ovata) (12 men; 90 women); and followed by (2) osmotic laxatives (8 men; 43 women); (3) glycerol suppositories or enemas (3 men; 16 women). Thirty-nine women with decreased EAS pressure simultaneously underwent biofeedback therapy.

Table 4 Response to treatment *n* (%)

	No follow-up	Follow-up		Response to treatment			
				Wexner score after treatment			
				0-1 WS	2- 5 WS	6-9 WS	⩾ 10 WS
Total (*n* = 764)	145 (19.0)	619 (81.0)		257 (41.5)	241 (38.9)	92 (14.8)	29 (4.7)
Men (*n* = 119)	36 (30.3)	83 (69.7)	Treatments:	28 (33.7)	39 (46.9)	10 (12.8)	6 (7.2)
n = 50	21 (42.0)	29 (58.0)	Chronic diarrhea[1]	4 (13.8)	22 (75.9)	2 (6.9)	1 (3.4)
n = 20	8 (40.0)	12 (60.0)	Constipation[2]	4 (33.3)	6 (50.0)	2 (16.6)	0 (0.0)
n = 12	5 (41.7)	7 (58.3)	Incomplete evacuation[3]	2 (28.6)	4 (57.1)	1 (14.3)	0 (0.0)
n = 25	0 (0.0)	25 (100.0)	Soiling[4]	18 (72.0)	6 (24.0)	1 (4.0)	0 (0.0)
n = 12	2 (16.7)	10 (83.3)	Others[5]	0 (00.0)	1 (10.0)	4 (40.0)	5 (50.0)
Women (*n* = 645)	109 (16.9)	536 (83.1)	Treatments:	229 (42.7)	202 (37.7)	82 (15.3)	23 (4.3)
n = 289	51 (17.6)	238 (82.3)	Chronic diarrhea[1]	129 (54.2)	88 (37.0)	21 (8.8)	0 (0.0)
n = 118	28 (23.7)	90 (76.3)	Constipation[2]	48 (53.3)	35 (38.9)	7 (7.8)	0 (0.0)
n = 74	18 (24.3)	56 (75.7)	Incomplete evacuation[3]	18 (32.1)	34 (60.7)	4 (7.1)	0 (0.0)
n = 32	2 (6.3)	30 (93.7)	Soiling[4]	22 (73.3)	6 (23.3)	2 (3.3)	0 (0.0)
n = 132	10 (7.6)	122 (92.4)	Others[5]	12 (9.8)	39 (31.9)	48 (39.3)	23 (18.8)
χ^2 (*P*) (men *vs* women)	4.98 (< 0.05)	4.98 (< 0.05)		1.72 (NS)	1.73 (NS)	0.26 (NS)	0.78 (NS)

[1]Patients with chronic diarrhea were treated in a stepwise approach according to the response: (1) dietary modification and loperamide; (2) resin-cholysteramine or codeine phosphate; (3) otilonium bromide; and (4) amitriptyline; [2]Patients with constipation were treated with: (1) a fiber-rich diet and a bulking agent; (2) osmotic laxative; and (3) glycerol suppositories or enemas; [3]Patients with incomplete evacuation were treated with bulking agents with or without glycerol suppositories or enema; [4]Patients with soiling started with fiber-rich diet and bulking agents; glycerol suppositories or enema; [5]Patients with inflammatory bowel disease, prolapses, neurological diseases required special treatment including specific therapy, surgery, anal plugs, sacral nerve electrostimulation, or a combination of several measures. NS: Not significant; WS: Wexner score.

Twenty-three of these women improved more than nine points on the Wexner score. Evacuation of feces was facilitated in 7 men and 56 women with (1) bulking agents; (2) glycerol suppositories (3 men; 22 women); and (3) enema (1 man; 14 women). Patients with soiling were started with (1) fiber-rich diet and bulking agents (25 men; 30 women) and followed with (2) glycerol suppositories (12 men; 14 women), and (3) rectal irrigation (6 men; 8 women). Finally, patients with inflammatory bowel disease (72), rectal prolapses (12), neurological diseases (39) or perineal trauma (7) received specific therapies, including surgery, anal plugs, sacral nerve electrostimulation or a combination of these measures. The Wexner score was five or less in 80.6% of men after treatment and even FI disappeared in 16.0% of them (Table 4). Likewise, the Wexner score after treatment was five or less in 80.4% of women and FI disappeared in 12.7% of them. Only in a minority of patients (7.2% men, 4.3% women), the Wexner score did not decrease under 10. Two men who responded poorly had difficulties following the treatment; four other patients had severe hypotony of both sphincters, two because of neurological diseases, one due to serious perineal trauma and another caused by a low anterior rectal resection. Finally, five women with poor response underwent sacral nerve electrostimulation. In three of these patients, FI improved. This treatment was also indicated in a man, but the procedure was refused by the patient.

DISCUSSION

In our study, 15.5% of patients with FI were men, that is, one man for every 5.4 women. This apparent low prevalence of FI in men is also found in other published series for FI[9,15]. Analysis of the medical or surgical background in patients with FI explains why this dysfunction is apparently more common in women. Thus, in 58.1% of women, there were problematic obstetric histories during which the anal sphincter may have been damaged. However, some studies have questioned whether FI is really less frequent in men than in women. This was the case of the study by Perry *et al*[6], in which, the authors looked for the presence of FI symptoms in a broad population of subjects over 40 years living at home. This study revealed FI in a large number of men who had never consulted a doctor for that reason and the prevalence of this dysfunction was similar to that found in women regardless of the severity and age. The apparent lower frequency of FI in men might be due to the fact that they consult their doctor far less frequently than women, particularly, when FI is mild, passive or soiling[8]. Our study shows that severity of FI was significantly associated with the time it took for the males patients to consult their doctor and, when they did, FI was more frequently severe than in women. That is, men sought medical attention only when symptoms of FI seriously altered their quality of life. It is well known the existing correlation between the severity of FI and the alteration of quality of life[14,19]. Another factor that may contribute to the appearance that FI is less common in men than in women is that many of the published studies come from specialized units in FI that collaborate closely with gynecological units[10]. This also occurs in our case. In our group of men, 28.6% of them had several risk factors for FI. This percentage was significantly lower than that found in women. This multiplicity of etiology in women was likely because ORF were present in most of them.

Soiling was more common in men than in women, while the urge and mixed types of FI were more frequent in women. These differences may be attributed to

the fact that etiology and mechanisms of FI were different in both sexes. Although there is no agreement on the mechanisms involved in the pathophysiology of soiling in men, a number of authors found no morphological or physiological changes in the anal sphincter[7,8,20]. In fact, all our male patients with soiling had normal or elevated resting anal pressures. On the contrary, most women with fecal soiling had decreased EAS pressure. Urge type of FI has been related to the weakness of the EAS, which often occurs after childbirth. Therefore, as our study confirms, urge is the predominant type of FI among women. Passive FI has been related to the incompetence of the IAS, which may occur in the course of ano-rectal surgery. Therefore, one might expect that this type of FI could be more common in men. However, some authors[21] have questioned these concepts. In fact, in our group of patients that underwent ano-rectal surgery, the dominant type of FI was urge, which may be ascribed to the frequent association with diarrhea. Among women, not only among those with ORF, the most common type of IF was urge. In addition, considering that mechanisms for FI are not simple but complex and multifactorial, it seems rational that FI was rather a mixed type in many of the cases.

Etiology of FI in men is not well established[9]. In some series, previous history of ano-rectal surgery is often found among them[8,22]. Prevalence of FI following rectal resection because of cancer has been estimated between 6% and 49%[9]. Surgery due to this condition removes rectal reservoir and often damages IAS. In addition, colon resection and eventually radiotherapy may contribute to cause diarrhea that favors fecal loss. In our series, history of previous surgery existed in 38.6% of men and only in 22.3% of women. Hemorrhoid surgery is a cause of FI, as in this procedure IAS may be damaged and the fecal contention mechanisms by the hemorrhoidal vessels may be lost[23]. In some series, this antecedent is present in 10% to 30% of patients with FI[23]. Another cause of FI is anal surgery for anal fistulas or fissures[24,25]; in our study, five men had this surgical history (Table 2). Although, the first cause of FI in men was diarrhea, its frequency was similar to that found among women. Even though isolated diarrhea does not usually cause FI, it may facilitate its presentation when it coincides with other changes in the mechanisms controlling fecal continence[3,15,26]. In our study, diarrhea acted as a predisposing factor for FI in both sexes.

Other common causes of FI in men were neurological disorders resulting from spinal cord injuries. In our series, this antecedent was found in 13.4% of men and in 3.6% of women. In all cases, there was concomitant constipation. In these cases, both FI and constipation occur because of the sacral parasympathetic involvement, the loss of somatic innervations of the EAS, the loss of its tone, and the irregular colonic contraction[27].

In the absence of other diagnostic tests, examination of the anal and perianal region may provide some helpful data concerning etiology of FI[4,11,28]. In our study, 23.5% of men and 43.9% of women presented some abnormality detected during inspection of the anal region. In men, the most frequent findings were postsurgical scars, deformities, and, to a lesser extent, rectal prolapses and hemorrhoids. The tone of the EAS was found to be decreased less frequently in men than in women due to the damage suffered by this sphincter during delivery.

Ano-rectal manometry confirmed that the EAS tone was reduced more often in women than in men, which, as mentioned above, can be ascribed mainly to the obstetric damage suffered by this sphincter.

Measurement of rectal sensitivity with a pneumatic balloon did not recognize many differences between men and women. However, this sensitivity was more frequently decreased in men. An increased rectal sensitivity may explain defecatory urgency and the urge type of FI. In fact, in our series, rectal sensitivity was significantly associated with the type of FI. Rectal sensitivity tends to be increased in patients with proctitis, after rectal surgery when rectal remnant was small and with limited capacity, after radiotherapy with involvement of the rectal mucosa, and also in irritable bowel syndrome[1,11,29]. In our series of men, medical history most often associated with increased rectal sensitivity was diarrhea and ano-rectal surgery. On the contrary, megarectum and fecal impaction are causes of decreased rectal sensitivity[11,30]. In our study, decrease in the rectal sensitivity was more common in men with constipation and neurological disorders. In women, this dysfunction was found mainly in association with ORF or constipation. In both men and women, disturbances of the RAIR were rarely found.

All manometric studies were normal in 17.8% of men with FI. Although in these cases, FI was usually soiling, urge was also present, likely because of its association with diarrhea. Mechanisms by which soiling occurs in these cases are not well understood, but several explanations have been proposed. Some authors suggest that FI appears in subjects who have a relatively long anal canal and an increased basal pressure. These changes determine that feces remain trapped in the canal, from where they can easily escape[7]. Other authors have ascribed it to a loss of rectal sensitivity[30]. It is well known that an incomplete emptying of the intestinal content plays a more important role in the physiology of fecal escape than the sphincter dysfunction[11,29]. A delay in the first rectal sensation together with a normal relaxing reflex has also been mentioned[31,32]. Finally, some authors assume the existence of unknown fecal contention factors[8].

In our patients and based on the results of the diagnostic investigation, we recommended an individualized treatment[1,11,15,17]. These measures include hygienic and dietary modification, bulking agents, loperamide, resincholestyramine, otilonium bromide, or amitryptiline in the cases of diarrhea. Bulking agents, laxatives and rectal cleansing if constipation or incomplete evacuation was found. Fiber-rich diet, bulking agents, glycerol suppositories or rectal irrigation were used in cases of soiling.

Some patients underwent biofeedback, sacral nerve electrostimulation, anal plugs, surgery or specific therapy for inflammatory bowel disease. Using these therapeutic measures, clinical response was good in both women and men, even with the complete resolution of FI in 13.2% of patients. The Wexner score after treatment was five or less in 80.4% of patients. The good results obtained in the patients included in this series may be ascribed, at least in part, to the control of the chronic diarrhea existing in nearly half of the patients. For Whitehead *et al*[3], chronic diarrhea is a major risk factor for FI that can be easily controlled. In a minority of men, treatment was ineffective. In some of these cases, the failure was because patients had difficulties following the prescribed treatment. In other patients, the failure was due to the severity of FI and to the presence of significant hypotony of both anal sphincters secondary to aggressive anal or perianal surgery, which finally required bypass surgery. The use of anal plugs is a good option in some patients in whom FI is caused by failure of the IAS, which can rarely be repaired[11], and in FI of neurological origin. No other therapeutic options were used in the patients included in this study.

We conclude that it was not common that men consulted for fecal incontinence. Compared to women, FI was caused more frequently by ano-rectal surgery and it was frequently severe in men. Men took longer to seek medical attention. From the manometric viewpoint, there were no differences between the sexes except that the resting pressure and the EAS tone were more frequently decreased in women. Anorectal physiology did not justify FI in men with soiling. Response to the etiologic and physiopathological treatment was usually excellent.

COMMENTS

Background

Fecal incontinence (FI) is defined as the involuntary and recurrent loss of feces through the anus. It represents a clinical condition that may significantly alter both physically and mentally the quality of life of patients.

Research frontiers

This study to determine the causes, clinical and manometric characteristics of FI in men and to compare these features with those found in a group of women studied for the same disorder.

Innovations and breakthroughs

From the manometric viewpoint, there were no differences between the sexes except that the resting pressure and the EAS tone were more frequently decreased in women. Anorectal physiology did not justify FI in men with soiling.

Applications

It was common that men waited longer in seeking medical help for fecal incontinence.

Peer review

The study by Muñoz-Yagüe *et al* addresses the issue of incontinence in men as a clinical observation. The study is strong, the clinical assessments are definitive and results and interpretation are acceptable. The manuscript is well-written.

REFERENCES

1 **Whitehead WE**, Bharucha AE. Diagnosis and treatment of pelvic floor disorders: what's new and what to do. *Gastroenterology* 2010; **138**: 1231-1235, 1235.e1-4 [PMID: 20176023 DOI: 10.1053/j.gastro.2010.02.036]

2 **Muñoz Yagüe MT**. Fecal incontinence, an ignored and concealed problem. *Rev Esp Enferm Dig* 2005; **97**: 71-77 [PMID: 15801882]

3 **Whitehead WE**, Borrud L, Goode PS, Meikle S, Mueller ER, Tuteja A, Weidner A, Weinstein M, Ye W. Fecal incontinence in US adults: epidemiology and risk factors. *Gastroenterology* 2009; **137**: 512-517, 517.e1-2 [PMID: 19410574 DOI: 10.1053/j.gastro.2009.04.054]

4 **Kamm MA**. Obstetric damage and faecal incontinence. *Lancet* 1994; **344**: 730-733 [PMID: 7915781]

5 **Goode PS**, Burgio KL, Halli AD, Jones RW, Richter HE, Redden DT, Baker PS, Allman RM. Prevalence and correlates of fecal incontinence in community-dwelling older adults. *J Am Geriatr Soc* 2005; **53**: 629-635 [PMID: 15817009]

6 **Perry S**, Shaw C, McGrother C, Matthews RJ, Assassa RP, Dallosso H, Williams K, Brittain KR, Azam U, Clarke M, Jagger C, Mayne C, Castleden CM. Prevalence of faecal incontinence in adults aged 40 years or more living in the community. *Gut* 2002; **50**: 480-484 [PMID: 11889066]

7 **Parellada CM**, Miller AS, Williamson ME, Johnston D. Paradoxical high anal resting pressures in men with idiopathic fecal seepage. *Dis Colon Rectum* 1998; **41**: 593-597 [PMID: 9593241]

8 **Titi M**, Jenkins JT, Urie A, Molloy RG. Prospective study of the diagnostic evaluation of faecal incontinence and leakage in male patients. *Colorectal Dis* 2007; **9**: 647-652 [PMID: 17824983]

9 **Kim T**, Chae G, Chung SS, Sands DR, Speranza JR, Weiss EG, Nogueras JJ, Wexner SD. Faecal incontinence in male patients. *Colorectal Dis* 2008; **10**: 124-130 [PMID: 17498204]

10 **Christoforidis D**, Bordeianou L, Rockwood TH, Lowry AC, Parker S, Mellgren AF. Faecal incontinence in men. *Colorectal Dis* 2011; **13**: 906-913 [PMID: 20402738 DOI: 10.1111/j.1463-1318.2010.02276.x]

11 **Bartolo DC**. Point of view: anal incontinence in men. *Gastroenterol Clin Biol* 2008; **32**: 949-952 [PMID: 18849128 DOI: 10.1016/j.gcb.2008.09.004]

12 **Rao SS**. Diagnosis and management of fecal incontinence. American College of Gastroenterology Practice Parameters Committee. *Am J Gastroenterol* 2004; **99**: 1585-1604 [PMID: 15307881]

13 **Jorge JM**, Wexner SD. Etiology and management of fecal incontinence. *Dis Colon Rectum* 1993; **36**: 77-97 [PMID: 8416784]

14 **Rothbarth J**, Bemelman WA, Meijerink WJ, Stiggelbout AM, Zwinderman AH, Buyze-Westerweel ME, Delemarre JB. What is the impact of fecal incontinence on quality of life? *Dis Colon Rectum* 2001; **44**: 67-71 [PMID: 11805565]

15 **Muñoz Yagüe T**, Alvarez Sánchez V, Ibáñez Pinto A, Solís-Herruzo JA. Clinical, anorectal manometry and surface electromyography in the study of patients with fecal incontinence. *Rev Esp Enferm Dig* 2003; **95**: 635-639, 629-634 [PMID: 14738408]

16 **Smith LE**, Timmcke AE. Methodology and applications of water perfusion anal manometry. In: Smith LE, ed. Practical Guide to Anorectal Testing. 2nd edition. New York-Tokio: Igaku-Shoin. Med. Pub, 1995: 27-36

17 **Norton C**, Whitehead WE, Bliss DZ, Harari D, Lang J. Management of fecal incontinence in adults. *Neurourol Urodyn* 2010; **29**: 199-206 [PMID: 20025031 DOI: 10.1002/nau.20803]

18 **Barisic GI**, Krivokapic ZV, Markovic VA, Popovic MA. Outcome of overlapping anal sphincter repair after 3 months and after a mean of 80 months. *Int J Colorectal Dis* 2006; **21**: 52-56 [PMID: 15830204]

19 **Leger F**, Henry L, Mion F, Roman S, Barth X, Colin C, Schott AM, Damon H. Clinical, sonographic and manometric characteristics and impact on quality of life of fecal incontinence in 92 men referred for endoanal ultrasonography. *Gastroenterol Clin Biol* 2008; **32**: 328-336 [PMID: 18403147 DOI: 10.1016/j.gcb.2008.02.010]

20 **Qureshi MS**, Rao MM, Sasapu KK, Casey J, Qureshi MU, Sadat U, Hick D, Ambrose S, Jayne DG. Male faecal incontinence presents as two separate entities with implications for management. *Int J Colorectal Dis* 2011; **26**: 1589-1594 [PMID: 21789671 DOI: 10.1007/s00384-011-1273-x]

21 **Deutekom M**, Dobben AC, Terra MP, Engel AF, Stoker J, Bossuyt PM, Boeckxstaens GE. Clinical presentation of fecal incontinence and anorectal function: what is the relationship? *Am J Gastroenterol* 2007; **102**: 351-361 [PMID: 17100975]

22 **Lindsey I**, Jones OM, Smilgin-Humphreys MM, Cunningham C, Mortensen NJ. Patterns of fecal incontinence after anal surgery. *Dis Colon Rectum* 2004; **47**: 1643-1649 [PMID: 15540293]

23 **Read MG**, Read NW, Haynes WG, Donnelly TC, Johnson AG. A prospective study of the effect of haemorrhoidectomy on sphincter function and faecal continence. *Br J Surg* 1982; **69**: 396-398 [PMID: 7104609]

24 **van Tets WF**, Kuijpers HC. Continence disorders after anal fistulotomy. *Dis Colon Rectum* 1994; **37**: 1194-1197 [PMID: 7995143]

25 **Khubchandani IT**, Reed JF. Sequelae of internal sphincterotomy for chronic fissure in ano. *Br J Surg* 1989; **76**: 431-434 [PMID: 2736353]

26 **Bharucha AE**, Zinsmeister AR, Schleck CD, Melton LJ. Bowel disturbances are the most important risk factors for late onset fecal incontinence: a population-based case-control study in women. *Gastroenterology* 2010; **139**: 1559-1566 [PMID: 20708007 DOI: 10.1053/j.gastro.2010.07.056]

27 **Glickman S**, Kamm MA. Bowel dysfunction in spinal-cord-injury patients. *Lancet* 1996; **347**: 1651-1653 [PMID: 8642958]

28 **Hallan RI**, Marzouk DE, Waldron DJ, Womack NR, Williams NS. Comparison of digital and manometric assessment of anal sphincter function. *Br J Surg* 1989; **76**: 973-975 [PMID: 2679966]

29 **Bharucha AE**, Fletcher JG. Recent advances in assessing anorectal structure and functions. *Gastroenterology* 2007; **133**: 1069-1074 [PMID: 17919481]

30 **Burgell RE**, Bhan C, Lunniss PJ, Scott SM. Fecal incontinence in men: coexistent constipation and impact of rectal hyposensitivity. *Dis Colon Rectum* 2012; **55**: 18-25 [PMID: 22156863 DOI: 10.1097/DCR.0b013e318237f37d]

31 **Hoffmann BA**, Timmcke AE, Gathright JB, Hicks TC, Opelka FG, Beck DE. Fecal seepage and soiling: a problem of rectal sensation. *Dis Colon Rectum* 1995; **38**: 746-748 [PMID: 7607037]

32 **Lubowski DZ**, Nicholls RJ. Faecal incontinence associated with reduced pelvic sensation. *Br J Surg* 1988; **75**: 1086-1088 [PMID: 3208041]

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