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Two Etiological Reasons of Constipation: Anterior Rectocele and Internal Mucosal Intussusception

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Abstract Chronic constipation is a common problem in the general population. Rome III criteria can be used for the diagnosis of chronic constipation. The aim of this study is to emphasize the importance of anterior rectocele and mucosal intussusception as two etiological factors for chronic constipation. One hundred patients were included in this study after excluding other causes of the constipation by medical history, physical examination, and laboratory and radiological studies in 108 total patients who were admitted consecutively to the outpatient clinic of the general surgery department of Dr. Sadi Konuk Bakirkoy Education and Research Hospital with the complaint of constipation between June 2009 and January 2010. It was found that 75 % of these patients had anterior rectocele and 66 % of them had internal intussusception which cause chronic constsipation. Anterior rectocele and internal rectal mucosal intussusception must be kept in mind as two significant reasons for chronic functional constipation.

Keywords Chronic constipation · Rectocele · Intussusception

Introduction

Chronic functional constipation (CFC) has been described in various terms by several different authors. Constipation is not a disease but a subjective symptom varying between individuals and interpreted in different ways. Frequency of defecation ranging from once a day to once in 3 days is considered as normal. In general, two or fewer bowel movements per week

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are defined as constipation, but the number of defecation alone is not a sufficient criterion for constipation [1]. The number and amount of the defecation varies between individuals and communities. This symptom may be described in different ways by patients and physicians. According to the patients, constipation can be defined as presence of one or more of these symptoms: hard stools, infrequent defecation (typically less than three times a week), the necessity of intensive straining, sensation of incomplete evacuation, poor bowel movement, pressure around the anus or vagina, digital intervention, and spending too much time in the toilet.

For the validity of the Rome III criteria, the patient's complaints of constipation must have started at least 6 months before the admission to the hospital and the complaints must be present for three or more days per month for a duration of at least 3 months (Table 1). Identification of the etiology of this frequent complaint is necessary in order to plan a reliable treatment program. Otherwise, the treatments carried out may complicate the pathology and may lead to waste of time [2–4].

As numerous systemic, metabolic, and endocrine disorders are present in the etiology of CFC, patients must be assessed by complete blood count, thyroid function tests, and biochemistry studies [5]. In patients with normal laboratory results, evaluation of colonic transit time is useful to understand whether the proximal colon (slow colonic transit) or rectosigmoid region (defecation disorder) is responsible for the constipation; besides, many have normal colonic transit time [2]. Anorectal manometry is a relatively noninvasive procedure that provides useful information about anorectal disorders [6]. Defecography also enables the evaluation of rectal emptying function by fluoroscopic way. Quantitative analysis of rectal emptying in patients with "difficulty in defecation" is important [7]. Double-contrast colon graphy can determine the lumenal pathologies over a diameter of 6 mm.

Table 1 Diagnostic criteria of ROME III

Rome III criteria for constipation

Must include two or more of the following:

1 Straining during at least 25 % of defecations

2 Lumpy or hard stools in at least 25 % of defecations

3 Sensation of incomplete evacuation for at least 25 % of defecations

4 Sensation of anorectal obstruction/blockage for at least 25 % of defecations

5 Manual maneuvers to facilitate at least 25 % of defecations (e.g., digital evacuation, support of the pelvic floor)

6 Fewer than three defecations per week

Loose stools are rarely present without the use of laxatives

Insufficient criteria for irritable bowel syndrome

Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

The aim of this study is to emphasize the importance of anterior rectocele and internal mucosal intussusception as two etiological reasons of constipation.

Material and Method

One hundred and eight patients consecutively attended to the general surgery outpatient clinic of the general surgery department of Dr. Sadi Konuk Bakirkoy Education and Research Hospital with the complaint of constipation between June 2009 and January 2010 were considered for participation in the study. Patients with two or more Rome III criteria were considered as chronic constipation and were enrolled in the study (Table 1). Patients with one Rome III score and who had medical disorders that may play a role in the etiology of constipation like hypothyroidism, anal fissure, hemorrhoidal disease, or colorectal surgery history were excluded from the study. Patients were evaluated by gender, age, professions, medical history, concomitant disorders, medications, and Rome III scores. Patients were assessed by complete blood count; calcium, magnesium, and phosphorus serum levels; and thyroid function tests. Thus, three patients were excluded due to history of colorectal surgery, two patients due to anal fissure, one patient due to hypothyroidism, and two patients due to Rome III score lower than 2. Therefore, a total of 100 patients participated in the study.

A 3-day low-protein, high-fiber diet was ordered to these patients. Then, patients took one Sitzmarks ® capsule (each capsule with 24 radiopaque markers) orally for the assessment of colonic transit time. Plain abdominal and pelvic graphies were taken on days 5 and 7 after the intake of markers. Number of markers that were displayed on graphies and their locations were documented.

All patients were also assessed with cinedefecography in our surgical endoscopy unit with barium starch mixture.

Finally, patients were assessed by double-contrast barium enema studies by the radiology department.

For statistical analysis, NCSS (Number Cruncher Statistical System) 2007 and PASS 2008 Statistical Software (UT, USA) was used.

Results

The study was performed between June 2009 and January 2010, with 100 patients. Eighty-five percent ($n=85$) of patients were female and 15 % ($n=15$) were male. The age range was from 16 to 74 years, and mean age of the cases was 39.16 ±12.76 years. 9 (9 %) of them were using medications for their constipation, whereas 91 (91 %) of them were not. 8 (8 %) patients had disorders not associated with constipation (such as hypertension), and 92 (92 %) patients did not have a comorbid disorder. Seventy-four (74 %) of the patients were housewives, 6 (6 %) were retired, 13 (13 %) were workers, and 7 (7 %) were students. All patients were admitted to our outpatient clinic with the complaint of constipation. In addition to constipation, 78 (78 %) of them had difficulty in defecation, 44 (44 %) of them had abdominal pain, and 8 (8 %) of them are using manual maneuvers to facilitate defecation.

According to the Rome III criteria, 24 (24 %) patients had a score of 2, 49 (49 %) patients had a score of 3, and 27 (27 %) patients had a score of 4. Fifteen (15 %) patients had prolonged colonic transit time, whereas 85 (85 %) patients' colonic transit time was normal (Table 2). Markers accumulated in the rectosigmoid region in 11 patients, in the right colon in 2 patients, and in the left colon in 2 patients.

Defecography revealed anterior rectocele in 75 patients (75 %), internal mucosal intussusception in 66 patients (66 %), puborectal spasm in 12 patients (12 %), and total pelvic descensus in 4 patients (4 %). No abnormality was found in eight patients (8 %) (Table 3).

Due to the double-contrast enema studies, 92 patients (92 %) had no pathological findings whereas 4 patients (4 %) had dolichocolon and 4 patients (4 %) had colonic diverticular disease (Table 4). Anterior rectocele rate was significantly higher in females ($p<0.01$). The incidence of anterior rectocele in patients with difficulty in defecation

Table 2 Colonic transit time results

Colonic transit time		Number of patients (N)	Percent (%)
5 days	Normal	79	79
	Prolonged	21	21
7 days	Normal	85	85
	Prolonged	15	15

Table 3 Defecography results

Defecography	Number of patients (N)	Percent (%)
Anterior rectocele	75	75
Internal mucosal intussusception	66	66
Puborectal spasm	12	12
Total pelvic descensus	4	4
Normal	8	8

was significantly higher (p<0.01). Patients who made manual maneuvers to facilitate defecation had significantly higher anterior rectocele rates (p<0.05).

Anterior rectocele rates were higher in patients with a Rome III score of 3 than in patients with a score of 2 (p<0.05). There was a correlation between the incidence of anterior rectocele and higher Rome III scores. There was no statistical association between colonic transit time and the presence of anterior rectocele (p>0.05). It was found that internal mucosal intussusception rate was higher in women (p<0.05). Incidence of internal mucosal intussusception was higher in patients with difficulty in defecation (p<0.05). It was also found that patients with difficulty in defecation had scores of 3 or 4 according to the Rome III criteria (p<0.001). Similarly patients with abdominal pain had scores of 3 or 4 according to the Rome III criteria.

Colonic transit times were longer in patients who had a score of 3 according to Rome III criteria (p<0.05).

There was no statistical significant correlation found between other parameters.

Discussion

Constipation is the most common complaint related to the gastrointestinal system. Many individuals who are straining (more bearing down) during defecation, defecating small amounts of hard, lumpy or pellet-like stool after an excessive effort in a distressed and restless way are considered as constipated even if their frequency of defecation is normal [1].

Constipation diagnosis was based on the Rome III criteria in almost all previous studies. However, the association between the Rome III scores and constipation etiology has not been investigated yet. In our study, anterior rectocele rate was

Table 4 Double-contrast colon graphies results

Double-contrast colon graphies	Number of patients (N)	Percentage (%)
Doligocolon	4	4
Normal	92	92
Colonic diverticulum	4	4

significantly higher in patients whose Rome III scores were 3 versus patients whose scores were 2. We suggest that it is necessary to evaluate patients who have higher scores according to the Rome III criteria with defecography.

Sarles et al. advocate that there must be three criteria such as vaginal maneuver during defecation, defecography must prove difficulty in defecation, and defecographic findings should exclude the pathologies such as rectal intussusception for an association between rectocele and rectal outlet obstruction [8].

To realize the etiology of constipation, colonic transit time, double-contrast colon graphy, defecography, and colonoscopy can be utilized. Felt-Bersma et al. stated that defecography was the standard technique for the diagnosis of rectal intussusceptions. Also, it was reported that defecographic findings of intussusception may be a sign of solitary rectal ulcer. They reported that 55 % of patients with solitary rectal ulcer had symptoms of constipation and some of them used manual maneuvers to facilitate defecation. In 26 % of patients, solitary rectal ulcer was with inflammatory bowel disease and superficial hemorrhage [9]. In our study, patients with a score of 3 and higher, regarding Rome III criteria, had low mean corpuscular volume (MCV). This may predict that in patients with the diagnosis of intussusception, further evaluation is necessary for the presence of solitary rectal ulcer.

Ansari et al. compared the colonic transit times of two groups. The first group of patients was diagnosed with chronic constipation according to the Rome III criteria and the second group had constipation-predominant irritable bowel syndrome. Colonic transit time in the functional constipation patient was slower than in constipation-predominant irritable bowel syndrome patient [10]. In our study, colonic transit time was prolonged in 15 of 100 patients and it was determined that 11 of these 15 patients had outlet syndrome. Accumulations of radiopaque markers in the right colon in two patients and accumulations in the left colon in two patients were demonstrated. According to our study, there was no significant association between the colonic transit time and the presence of rectocele.

Beevors et al. reported that parity could play a role in the etiology of rectocele but they also indicated that rectocele could be present in patients who had never had a vaginal delivery. Direct injury of the rectovaginal septum during childhood, pelvic floor or pudendal nerve injury can increase the size of the rectal portion that protrudes into the vagina [11].

Rectocele incidence was reported as 80 % for the general population but only 20 % of them were found to be symptomatic [12]. In our study, the rate of rectocele was 78 % in 100 patients. Because all patients had complaints of constipation, this ratio could not be an exact reference for the asymptomatic individuals. However, in order to identify whether rectocele plays a role in the etiology of constipation or it emerges secondary to the constipation leading diseases (puborectal spasm, etc.) and to predict the rectocele incidence independent of constipation, further research is needed.

Defecography is a diagnostic tool that demonstrates both physiologic and pathologic properties of the pelvic floor functionally and morphologically. Investigators who reviewed more than 2,500 reports in the previous 15 years in two different radiology departments concluded that defecography is the gold standard for the diagnosis of rectocele, enterocele, and pelvic floor disorders such as intussusception [13].

Savoye-Collet et al. compared the defecographies of 198 symptomatic women and 66 symptomatic men [14]. Normal defecographic findings were present in 22.7 % of the males and 5.5 % of the females. For the males, 4.5 % had rectocele and 10.6 % of them had enterocele while 44.4 % of the women had rectocele and 29.8 % of them had enterocele. There was no significant difference between the percentages of intussusception according to gender. As a conclusion, they reported that rectocele, enterocele, and perineal collapse were more common in women [15]. In our study, 85 (85 %) of 100 patients diagnosed with chronic constipation were females. Furthermore 69 of 75 patients with rectocele were females (92 %) and only six of them were males (8 %). This difference was statistically significant and indicated that rectocele was more frequent in women.

Thirty seven patients with defecation problem and 30 healthy volunteers were examined in order to assess the value of defecography in the diagnosis of defecation problems in one of the previous studies [16]. Defecographic findings were normal in the control group when compared with the patients. Rectal emptying was longer and difficulty in defecation was more frequent in patients with chronic constipation versus the control group. Only males were included in this study. In conclusion, authors reported that morphological and functional disorders could be diagnosed by defecography [16]. All patients were evaluated with defecography in our study, and 95 (95 %) cases with pathologic findings were detected. Fifteen percent of patients were male in our study. We suggest that defecography should be performed for the diagnosis of patients with chronic constipation, especially for cases with outlet syndrome.

Conclusion

Chronic constipation is a common reason for admission to outpatient clinics because it is a frequent disorder in the general population and it affects the quality of life of patients. We concluded from this study that co-occurrence of rectocele and internal rectal mucosal intussusception with chronic constipation was higher than previous studies. But, it is not possible to detect if these disorders are the cause or the result of chronic constipation; therefore, in order to identify the association between rectocele and internal rectal mucosal intussusception with chronic constipation, long-term cohort studies should be performed. We suggest that defecography has a high diagnostic value for rectocele and internal mucosal intussusception, and it can be accepted as one of the first line diagnostic tools in patients with chronic constipation.

References

1. Yurdakul İ. İ.Ü. Cerrahpaşa Tıp Fakültesi Sürekli Tıp Eğitimi Etkinlikleri: Sempozyum Dizisi No:58 Kasım 2007; s. 43–58
2. Pezim ME, Pemberton JH, Levin KE, Litchy WJ, Phillips SF (1990) Parameters of anorectal and colonic motility in health and severe constipation. Dis Colon Rectum 36:484–491
3. Preston DM, Lennard-Jones JE, Thomas BM (1984) The baloon proctogram. Br J Surg 71:29–32
4. Nicholls RJ, Simson JNL (1986) Anteroposterior rectopexy in the treatment of solitary rectal ulcer syndrome without overt rectal prolapse. Br J Surg 73:222–224
5. Morley JE (2007) Constipation and irritable bowel syndrome in the elderly. Clin Geriatr Med 23:823–832
6. Arndorfer RC, Stef JJ, Dodds WJ, Linehan WH, Hogan WJ (1977) Improved perfusion system for intraluminal esophageal manometry. Gastroenterology 73:23–27
7. Lacerda-Filho A, Lima MJ, Magalhães MF, Paiva Rde A, Cunha-Melo JR (2008) Chronic constipation—the role of clinical assessment and colorectal physiologic tests to obtain an etiologic diagnosis. Arq Gastroenterol 45(1):50–57
8. Sarles JC, Arnaud A, Selezneff I, Olivier S (1989) Endorectal repair of rectocele. Int J Colorectal Dis 4:167–171
9. Felt-Bersma RJ, Tiersma ES, Cuesta MA (2008) Rectal prolapse, rectal intussusception, rectocele, solitary rectal ulcer syndrome, and enterocele. Gastroenterol Clin N Am 37:645–668
10. Ansari R, Sohrabi S, Ghanaie O, Amjadi H, Merat S, Vahedi H, Khatibian M (2010) Comparison of colonic transit time between patients with constipation-predominant irritable bowel syndrome and functional constipation. Indian J Gastroenterol 29(2):66–68
11. Beevors MA, Lubowski DZ, King DW et al (1991) Pudendal nerve function in women with symptomatic utero-vaginal prolapse. Int J Colorectal Dis 6:24–28
12. Shorvon PJ, McHugh S, Diamant NE et al (1989) Defecography in normal volunteers: results and implications. Gut 30:1737–1749
13. Faccioli N, Comai A, Mainardi P, Perandini S, Moore F, Pozzi-Mucelli R (2010) Defecography: a practical approach. Department of Radiology, G. B. Rossi University Hospital, Verona
14. Savoye-Collet C, Savoye G, Koning E, Leroi AM, Dacher JN (2010) Gender influence on defecographic abnormalities in patients with posterior pelvic floor disorders. World J Gastroenterol 16(4):462–466
15. Omotosho TB, Rogers RG (2009) Evaluation and treatment of anal ıncontinence, constipation, and defecatory dysfunction. Obstet Gynecol Clin N Am 36(3):673–697
16. Tomita R, Igarashi S, Fujisaki S, Koshinaga T (2010) Significance of defecography in the diagnosis and evaluation of male patients with defecation disorders. Department of Surgery, Nippon Dental University Hospital at Tokyo, Japan, Tokyo