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Original Research Article

Anorectal manometry profile among elderly patients with chronic constipation in a tertiary health center

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ABSTRACT

Background: Constipation is a common condition in elderly in India. High resolution anorectal manometry (HRAM) is an essential tool in the evaluation. In this context, studies from south India are sparse regarding the motility data of elderly patients with functional constipation. We aimed at studying anorectal pressure patterns in this population of this part of the country.
Methods: Manometric data of 50 elderly patients (≥60 year), who underwent the procedure for chronic constipation (Rome IV), was retrospectively collected. Manometric parameters were compiled and observations tabulated.
Results: Among 50 patients, 35 were (70%) males and 15 (30%) females with mean age of 66.5±3.2 years. In HRAM study, the mean resting pressure was 90.2±27.5 mmHg (range 43-153 mmHg) and mean squeeze pressure was 136.9±39.76 mmHg (range 88-223 mmHg). In present study 23 patients had abnormal HRAM suggestive of dyssynergic defecation (46%).
Conclusions: The present study showed that 46% of the elderly constipation patients had defecation disorder. Defecation disorders are common in our population and there is a need to diagnose it as treatment perspectives differ from other causes of constipation.

Keywords: Chronic constipation, Dyssynergic defecation, High resolution anorectal manometry, Rome IV criteria

INTRODUCTION

Chronic constipation is a common condition worldwide with a prevalence of 15%.[1] Available data from India shows that it is a common occurrence here, in contrast with the popular statement that it is rare due to majority vegetarian diet and higher frequency of bowel movement in our population.[2] The condition might actually be under reported in India. The frequency of chronic constipation increases with age. In an eastern Indian study, of 331 consecutive patients with chronic constipation, 65% were older than 60 years.[3] Western studies show that 50% patients with constipation have abnormal anorectal manometry.[4] Majority of Indian studies regarding chronic constipation are from Northern India, which have considered self-perception or Rome criteria in defining the condition.[5,6]

High resolution anorectal manometry (HRAM) is a valuable diagnostic tool that enables a comprehensive assessment of the pressure activity in the recto anal region.[7] The pressure abnormalities provide an insight regarding the cause of constipation in spite of absence of any organic pathology in the colon. The high rate of recurrence of constipation and/or rectal out- let problems in the elderly results not only in diminished health-related quality of life and high economic burden, but contributes to complications such as fecal impaction, stercoral ulcers, volvulus, and visits to the hospital to correct these problems.[8] Abnormal pressure pattern warrants a different approach in treating such patients. Published studies in this field are very few from south India. Accordingly, we studied the motility data of elderly patients with chronic constipation and normal colonoscopy, using high resolution anorectal manometry.

METHODS

This retrospective study was done at a tertiary health centre, Gandhi Medical College Hospital, Secundrabad, Telangana, India. Data was collected from the records of Manometry done between June 2022 and May 2023. Institutional ethical committee clearance was obtained for the study.

Inclusion criteria

Patients aged ≥60 years, diagnosed with chronic constipation according to Rome IV criteria, normal colonoscopy study.

Exclusion criteria

Patients with history of prior anorectal surgery, inflammatory bowel disease or anorectal malignancy were excluded from study.

Procedure

Baseline demographic characteristics, relevant clinical and laboratory data were collected. All patients had underwent full-length colonoscopy to rule out organic pathologies

High resolution anorectal manometry

Between June 2022 and May 2023, elderly patients aged ≥60 years (n=50) with chronic constipation underwent HRAM using standard technique. It was performed by using 16 channel water perfusion system (Kangaroo-jeff model, Royal Melbourne Hospital, Australia). A latex balloon which was tied at the tip of catheter was used for balloon expulsion test and to measure sensory parameters. Resting, squeeze and bear down was explained to patient in the local language before catheter was placed. Study was done with patient in left lateral decubitus position with knee and hips in flexion. Manometry catheter was inserted inside the rectum and then it was withdrawn slowly till it was in sphincter zone position, and high pressure zone is in middle, low-pressure zone (rectum) is above the sphincter zone. Five minutes of acclimatization time was given to the patient. The resting anal pressure (denotes internal anal sphincter activity) was measured, patient was asked to squeeze (denotes external anal sphincter activity) and squeeze pressure was measured. The patient was asked to bear down as done during defecation.

The balloon was incrementally inflated with air volumes (20, 40 and 60 cc and so on) and deflated each time after inflation. During the inflation, the patient was instructed to report about the feel of balloon for the first time, urge to defecate, and maximum tolerable level. During balloon inflation, recto-anal inhibitory reflex was also evaluated. All manoeuvres were performed in accordance to published international minimal standards using a previously published protocol.

Balloon expulsion test

Balloon expulsion test (BET) was done for all patients at the end of study. Balloon was filled with 50 ml water, the patient was asked to evacuate. If patient was unable to evacuate in one-two minutes, it was considered as abnormal BET. Both intra-rectal and intra-anal pressure were measured by anorectal manometry during BET.

Dyssynergic defecation was diagnosed based on the following criteria[9]

Patients fulfilling the diagnostic criteria for functional constipation (Rome IV). Patients demonstrating dyssynergic pattern during repeated attempts to defecate-a dyssynergic pattern of defecation (types I-IV) (Table 1). Inability to expel 50-ml inflated balloon within 1-2 minutes.

Table 1: Rao's classification of dyssynergic defecation.

Type I:	**The patient can generate an adequate pushing force (rise in intraabdominal pressure) along with a paradoxical increase in anal sphincter pressure**
Type II:	The patient is unable to generate an adequate pushing force (no increase in intrarectal pressure) but exhibit a paradoxical anal sphincter contraction
Type III:	The patient can generate an adequate pushing force (increase in intrarectal pressure) but, either has absent or incomplete (<20%) anal sphincter relaxation (i.e., no decrease in anal sphincter pressure)
Type IV:	The patient is unable to generate an adequate pushing force and demonstrates an absent or incomplete anal sphincter relaxation

Statistical analysis

Statistical analysis was done using the statistical software SPSS 24. Continuous variables were represented as mean (with standard deviation), and categorical variables were represented as frequency (percentage).

RESULTS

Demographic and clinical parameters

Of 50 patients included in the study, 35 were males (70%) and 15 (30%) were females. Mean duration of constipation was 4.16±1.19 years. Mean age of study participants was 66.5±3.2 years. The most common symptom was prolonged straining during defecation, followed by passage of hard stools (Table 2). Other symptoms were feeling of incomplete evacuation,

sensation of obstruction. Most common co morbidity was diabetes mellitus, which was in 22 patients (45%).

Table 2: Demography and symptomatology in study population (n=50).

Mean age	66.5±3.2 years
Mean duration of constipation	4.16±1.19 years
Males	35
Females	15
Symptoms	
Excess straining	21 (42%)
Passage of hard stools	15 (30%)
Feeling of incomplete evacuation	8 (16%)
Sensation of obstruction	5 (10%)
Digital manoeuvres	1 (2%)

High resolution anorectal manometry and balloon expulsion test

Mean resting anal pressure in our study was 90.2±27.5 mmHg. Mean squeeze pressure was 136.9±39.76 mmHg. Mean volume of first rectal sensation (ml) was 50.21±10.05. Mean volume for urgency was 92.8±18.6 (ml) and maximum tolerable volume (ml) was 157±37.99 (Table 3).

Table 3: Characteristics of anorectal pressure in patients with chronic constipation (n=50).

Parameter	Value
Mean resting pressure (mmHg)	90.2±27.5
Mean squeeze pressure (mmHg)	136.9±39.76
Mean volume of 1st sensation (ml)	50.21±10.05
Mean volume for urgency (ml)	92.8±18.6
Maximum tolerable volume (ml)	157±37.99

Table 4: Manometry patterns in our study.

Manometry pattern	N (%)
Normal pattern	27 (54%)
Abnormal pattern (dyssynergia)	23 (46%)
	Males- 13
	Females - 10

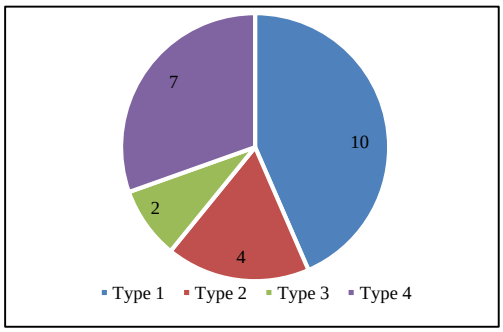

Figure 1: Distribution of dyssynergic defecation in our study.

On attempted defecation, 23 patients (13 males and 10 females) had abnormal manometric picture. Among the abnormal patterns, paradoxical increase in anal pressure while attempting to defecate (type 1 dyssynergic defecation) was most common (Figure 1). Among 23 patients of dyssynergic defecation, patients had diabetes mellitus.[18] All 23 patients with abnormal pattern also failed to expel balloon in BET. Balloon expulsion test was normal in remaining 27 patients (Table 4).

DISCUSSION

Our study showed that a) forty six percent of elderly patients with constipation visiting tertiary care centre had abnormal pressures depicting dyssynergic defecation, b) prolonged straining during defecation was the most common complaint followed by passage of hard stools, c) diabetes mellitus was present in 78.2% (18/23) patients with dyssynergic defecation.

Approximately half of the patients referred to tertiary care centres for constipation in the western countries have fecal evacuation disorder.[10] Surrenti et al showed that the commonest cause for constipation (n=70) in patients presenting to tertiary care practice was pelvic floor dyssynergia.[11] There are many studies which show incidence of constipation is much higher in elderly population. Study by Panigrahi et al showed that frequency of chronic constipation increases with age. In this study, stool frequency reduced with age, particularly among females.[12] In another study, of with constipation (n=925), functional constipation patients were older than those with IBS.[13] But studies specifically addressing anorectal pressure patterns in elderly patients are sparse the literature.

In current study, type I dyssynergic defecation is most common abnormal pattern in 10 patients (20 %) followed by type IV in 7 (14%), type II in 4 (8%) and type III in 2 (4 %) patients (Figure 1). A study by Jat et al showed that 46% of patients with chronic constipation had dyssynergic defecation and type 1 was the most common (17.4%).[14] Our findings were similar to a study published by Zhao et al, from China in 82 chronic constipation patients, where type I was the most common (n=24), followed by type IV (n=13), type II (n=12) and type III (n=11).[15]

In our study, pattern of dyssynergia was seen in 56.5% of males (13/23) and 43.4% of females (10/23). But a study by Ghoshal et al showed that female patients with constipation tended to have more abnormalities in anorectal manometry.[16] Dyssynergic defecation was seen in all patients with abnormal BET. This finding was similar to a study by Jain et al which stated that dyssynergia was significantly more common in those with abnormal BET.[17] Study by Baijal and Jain in 178 patients presenting with anorectal disorders showed dyssynergic defecation in 104 (58.4%).[17]

The most common comorbidity in patients with abnormal manometry was diabetes mellitus in our study. Interestingly, a study by Reszczynska showed that diabetes mellitus patients presented with enhanced features of dyssynergic defection than the control group.[18] Further comparative studies are required to associate diabetes mellitus and abnormal anorectal pressures.

The result of current study is in agreement with other Indian and Asian studies, which also suggested that dyssynergic defecation is a common cause of chronic constipation.

Awareness regarding anorectal pressure abnormalities in elderly chronic constipation patients is increasing in recent times. Diagnosing the abnormal pressure patterns is of paramount importance as many studies have shown that biofeedback therapy is more effective than dietary modification, laxatives, diazepam, muscle relaxants, placebo, and sham biofeedback.[19,21]

Our study did not have a control group to compare with the test subjects. Although there is some consensus that balloon expulsion test is more physiological in sitting position, our study was done in left lateral position. However, a study by Ratuapli et al comparing BET in sitting versus left lateral position by showed that there was modest agreement between rectal BET in left lateral and seated positions.[22] Finally, studies with larger sample size are required to outline the profile more clearly.

CONCLUSION

The present study showed that 46% of the elderly constipation patients had abnormal anorectal pressures suggestive of defecation disorder and most common was type 1 dyssynergic defecation. More prospective studies with large sample size are needed to address this issue.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Mugie SM, Benninga M.A, Di Lorenzo, C. Epidemiology of constipation in children and adults: a systematic review. Best Pract Res Clin Gastroenterol. 2011;25:3-18.
2. Ghoshal UC. Chronic constipation in Rome IV era: the Indian perspective. Indian J Gastroenterol. 2017;36:163-73.
3. Rahman MM, Mahadeva S, Ghoshal UC. Epidemiological and clinical perspectives on irritable bowel syndrome in India, Bangladesh and Malaysia: a review. World J Gastroenterol. 2017;23:6788-801.
4. Bharucha AE, Pemberton JH, Locke GR. American Gastroenterological Association Technical Review on Constipation. Gastroenterology. 2013;144:218-38.
5. Ghoshal UC, Abraham P, Bhatt C, Choudhuri G, Bhatia SJ, Shenoy KT, et al. Epidemiological and clinical profile of irritable bowel syndrome in India: report of the Indian Society of Gastroenterology Task Force. Indian J Gastroenterol. 2008;27(1):22-8.
6. Ghoshal UC, Singh R. Frequency and risk factors of functional gastro-intestinal disorders in a rural Indian population: dyspepsia and IBS in a rural Indian community. J Gastroenterol Hepatol. 2017;32:378-87.
7. Rao SS, Hatfield R, Soffer E, Rao S, Beaty J, Conklin JL. Manometric tests of anorectal function in healthy adults. Am J Gastroenterol. 1999;94(3):773-83.
8. Gallegos-Orozco JF, Foxx-Orenstein AE, Sterler SM, Stoa JM. Chronic constipation in the elderly. Am Coll Gastroenterol. 2012;107(1):18-25.
9. Rao SS. Dyssynergic defecation and biofeedback therapy. Gastroenterol Clin North Am. 2008;37(3):569-86.
10. Bharucha AE, Dorn SD, Lembo A, Pressman A. American Gastroenterological Association medical position statement on constipation. Gastroenterology. 2013;144(1):211-7.
11. Surrenti E, Rath DM, Pemberton JH, Camilleri M. Audit of constipation in a tertiary referral gastroenterology practice. Am J Gastroenterol. 1995;90(9).
12. Panigrahi MK, Kar SK, Singh SP, Ghoshal UC. Defecation frequency and stool form in a coastal eastern Indian population. J Neurogastroenterol Motil. 2013;19(3):374.
13. Rooprai R, Bhat N, Sainani R, Mayabhate MM. Prevalence of functional constipation and constipation-predominant irritable bowel syndrome in Indian patients with constipation. Int J Basic Clin Pharmacol. 2017;6:275.
14. Jat SL, Maan P, Sharma U, Sharma VM, Amit Mathur UV, Nidhi V. Anorectal manometry profile among patients with chronic constipation and faecal incontinence in western India: a retrospective study. Age (in years). 2022;51(16.2):15-76.
15. Zhao Y, Ren X, Qiao W, Dong L, He S, Yin Y. High-resolution anorectal manometry in the diagnosis of functional defecation disorder in patients with functional constipation: a retrospective cohort study. J Neurogastroenterol Motil. 2019;25(2):250.
16. Ghoshal UC, Verma A, Misra, A. Frequency, spectrum, and factors associated with fecal evacuation disorders among patients with chronic constipation referred to a tertiary care center in northern India. Indian J Gastroenterol. 2016;35:83-90
17. Jain M, Singh S, Baijal R. Diagnostic value of the balloon expulsion test compared with anorectal manometry in Indian patients with dyssynergic

defecation. Gastroenterol Rev/Przegląd Gastroenterol. 2020;15(2):151-5.
18. Reszczyńska M, Kempiński R. The prevalence of enteropathy symptoms from the lower gastrointestinal tract and the evaluation of anorectal function in diabetes mellitus patients. J Clin Med. 2021;10(3):415.
19. Parker CH, Henry S, Liu LWC. Efficacy of biofeedback therapy in clinical practice for the management of chronic constipation and fecal incontinence. J Can Assoc Gastroenterol. 2019;2:126-31.
20. Yu T, Shen X, Li M, Wang M, Lin, L. Efficacy and predictors for biofeedback therapeutic outcome in patients with dyssynergic defecation. Gastroenterol Res Pract. 2017;2017:1-8.
21. Wald A, Bharucha AE, Cosman BC, Whitehead WE. ACG clinical guideline: management of benign anorectal disorders. Am J Gastroenterol. 2014;109:1141-57.
22. Ratuapli S, Bharucha AE, Harvey D, Zinsmeister AR. Comparison of rectal balloon expulsion test in seated and left lateral positions. Neurogastroenterol Motil. 2013;25:e813-20.

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