ORIGINAL RESEARCH

Clinical profile and endoscopic analysis in small bowel diarrhea in tertiary care centre

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Received: 09 June, 2023 Accepted: 12 July, 2023

ABSTRACT

Background: Over the last ten years, there has been a notable narrative of achievement and advancement in the field of endoscopic imaging applied to the small intestine. The small intestine comprises the duodenum, jejunum, and ileum, spanning from the pylorus to the ileocecal valve. To study the clinical profile and endoscopic analysis in small bowel diarrhea in tertiary care centre. **Materials & Methods:** The present study was conducted over a time period of 2020-2021 at IPGMER Kolkata.A total of 100 subjects were enrolled. Colonoscopy and small bowel endoscopy due to small bowel diarrhea were examined. The factors that showed significance in the initial univariate analysis were subsequently incorporated into the multivariate analysis. The data was analysed using SPSS software. A p value < 0.05 was considered statistically significant. **Results:** A total of 100 consecutive patients who underwent gastrointestinal endoscopy to investigate chronic diarrhea were identified. Baseline characteristics are examined as the mean age was 56.42 years, and 44% patients were male. **Conclusion:** Small bowel endoscopy was recommended in cases where colonoscopy yielded negative results, especially for patients presenting with notable weight loss.

Keywords: endoscopy, Small bowel, diarrhea.

INTRODUCTION

Diarrhea is defined as a disorder in which water content in the stool is increased, resulting in stool softening and frequent bowel movements. It frequently develops in association with a pathological condition and in the majority of those cases is acute, with a duration of less than 4 weeks. [1] Diagnosis of acute diarrheal disease is not difficult, since the possible pathogeneses are mainly limited to infectious, toxic, and food-related etiologies. On the other hand, the pathogenesis of chronic diarrhea lasting over 4 weeks can be diverse and complicated, making etiological diagnosis difficult in some cases. [2] There is a broad spectrum of presentation from the classic malabsorption (diarrhoea, weight loss, steatorrhea, and multiple deficiencies - particularly iron, folic acid, B12 and fat-soluble vitamins) to much less common or even absence of symptoms.[3] These include iron-deficiency anaemia, isolated diarrhoea or symptoms that can mimic irritable bowel syndrome as well as extra gastrointestinal manifestations, which can affect virtually any system in the body from infertility, neurologic syndromes, and bone disease. Diarrhoea appears to be less frequent today than 20 years ago. [4] Coeliac disease can occasionally present with life threatening severity requiring hospitalization and parenteral support. [5] Patients with celiac disease may complain of malnutrition, diarrhea, and/or abdominal discomfort in advanced stages. Laboratory tests are useful for diagnosis, with the presence of the anti-tissue transglutaminase IgA antibody a sensitive and specific diagnostic marker of celiac disease. An endoscopic study, especially duodenal observation, is important for diagnosis since the upper small intestine is the most frequently and strongly damaged segment of the gut. Villous atrophy of the duodenal mucosa is the most frequently encountered endoscopic finding, however, identification of that only by endoscopic observation is not easy, thus a histopathological examination of biopsy specimens is important. In addition to villous atrophy, hyperplasia of pits and increased intraepithelial lymphocytes are important findings for confirming the diagnosis. [6]

In the past, the small bowel has largely been inaccessible to direct endoscopic examination, with only the duodenum, proximal jejunum and terminal ileum being subject to direct visualization by a conventional endoscope. This paradigm changed dramatically with the invention and introduction of small bowel videocapsule endoscopy (VCE) in 2000.

[7] The first wireless capsule, manufactured by Given Imaging (Yokneam, Israel) was approved for clinical use in United States and Europe in 2001. [8] Several other manufacturers subsequently released their own versions of VCE. This technology has been extensively used for the diagnosis and monitoring of patients with inflammatory bowel disease (IBD), mostly Crohn's disease (CD). About 30% of the patients with CD have exclusive small bowel involvement, and their diagnosis will frequently be missed if based solely on ileocolonoscopic findings. [9] Hence, this study was conducted to examine the clinical profile and endoscopic analysis in small bowel diarrhea in tertiary care centre.

MATERIALS & METHODS

A total of 100 subjects were enrolled. Colonoscopy and small bowel endoscopy due to small bowel diarrhea were examined. Small bowel endoscopy encompassed push enteroscopy, balloon-assisted enteroscopy (BAE), and video capsule endoscopy (VCE). A combination of univariate and multivariate analyses was conducted using logistic regression to pinpoint predictors of small bowel mucosal diseases in patients who had negative results in colonoscopy but still underwent small bowel endoscopy. The factors that showed significance in the initial univariate analysis were subsequently incorporated into the multivariate analysis. The data was analysed using SPSS software. A p value < 0.05 was considered statistically significant.

RESULTS

A total of 100 consecutive patients who underwent gastrointestinal endoscopy to investigate chronic diarrhea were identified. Baseline characteristics are examined as the mean age was 56.42 years, and 44% patients were male. The characteristics of diarrhea can be seen accordingly as mentioned.

Table 1: characteristic features

Characteristics	Number =100
Age (mean)	56.42
Gender (male)	44 (44%)
Diarrhea characteristics	
Watery	85 (85%)
Weight loss	60 (60%)
Blood	20 (20%)
Nausea	10 (10%)
Fever	5 (5%)
Abdominal pain	40 (40%)

Univariate and multivariate analyses were conducted to ascertain the factors that correlated with positive diagnostic outcomes in small bowel endoscopy. Age below 50 years, abdominal pain, and substantial weight loss exceeding 10% of the usual body weight emerged as significant factors in the univariate analysis. However, in the multivariate analysis, it was observed that significant weight loss retained its significance as a predictive factor.

Table 2: Univariate and multivariate analysis

Factors	Univariate analysis	P value	Multivariate analysis	P value
Age	0.2	<0.001	0.32	0.2
Male	2.05	0.2		
Blood stool	3.52	0.2		
Weight loss	14.85	<0.001 (Significant)	5.2	0.04 (Significant)
Abdominal pain	3.52	0.03 (Significant)	2.5	0.8
Fever	2.52	0.5		

P value <0.05 statistical significant

DISCUSSION

The prevalence of chronic diarrhea is reported to range from 4%–5% in the general population and is approximately half of chronic constipation. [10] Different from chronic constipation, which is more prevalent in elderly individuals, the prevalence of chronic diarrhea is higher in younger ages. The most frequently found organic disease identified in endoscopic studies is reported to be IBD, followed by microscopic colitis. IBD as well is more prevalent in young adults, while microscopic colitis, including collagenous colitis and lymphocytic colitis, is most frequently found in middle-aged individuals and elderly females. [11,12] Hence, this study was conducted to examine the endoscopic analysis in small bowel diarrhea in tertiary care centre.

In the presents study, a total of 100 consecutive patients who underwent gastrointestinal endoscopy to investigate chronic diarrhea were identified. Baseline characteristics are examined as the mean age was 56.42 years, and 44% patients were male. The characteristics of diarrhea can be seen accordingly as

mentioned. A study by Limsrivilai J et al, examined a total of 550 patients were included. The mean age was 54 years, and 266 (46.3%) patients were male. The mean hemoglobin and albumin levels were 11.6 g/dL and 3.6 g/dL, respectively. EGD and colonoscopy were performed in 302 and 547 patients, respectively, and the diagnostic yield was 24/302 (7.9%) for EGD and 219/547 (40.0%) for colonoscopy. EGD did not reveal positive findings in any patients with normal colonoscopy. Fifty-one patients with normal EGD and colonoscopy underwent small bowel endoscopy. Push enteroscopy, BAE, and VCE were performed in 28, 21, and 19 patients with a diagnostic yield of 5/28 (17.9%), 14/21 (66.7%), and 8/19 (42.1%), respectively. Significant weight loss, edema, and hypoalbuminemia were independent predictors for the positive yield of small bowel endoscopy. Colonoscopy was an essential diagnostic tool in identifying the cause of chronic diarrhea in Thai patients, whereas EGD provided some benefits. Small bowel endoscopy should be performed when colonoscopy and EGD were negative, particularly in patients with significant weight loss, edema, and hypoalbuminemia. [13]

In the present study, univariate and multivariate analyses were conducted to ascertain the factors that correlated with positive diagnostic outcomes in small bowel endoscopy. Age below 50 years, abdominal pain, and substantial weight loss exceeding 10% of the usual body weight emerged as significant factors in the univariate analysis. However, in the multivariate analysis, it was observed that significant weight loss retained its significance as a predictive factor. Another study by Bartel MJ et al, endoscopic imaging of the small bowel, frequently used in gastroenterology practice, encompasses mainly video capsule endoscopy (VCE) and device-assisted enteroscopy (DAE). Both tests are essential diagnostic tools to evaluate obscure gastrointestinal bleeding and suspected small-bowel disorders, such as Crohn's disease. VCE solely identifies and localizes small-bowel pathology, whereas DAE offers both visualization and tissue sampling to diagnose diseased structures and perform therapeutic maneuvers, such as those needed to achieve hemostasis. In this context, VCE is frequently used as a screening test for small-bowel abnormalities that, when present, are then managed with DAE. [14]Skamnelos A et al, the impact of small-bowel (SB) capsule endoscopy and device-assisted enteroscopy on clinical practice, since their introduction 2 decades ago, has been remarkable. These disruptive technologies have transformed the investigation and management of SB pathology and now have a firmly established place in guidelines and clinical algorithms. Furthermore, recent years have witnessed innovations, driven by the demand of new goals in the management of inflammatory bowel disease (IBD), such as mucosal healing and evolving strategies based on tight monitoring and accelerated escalation of care. These developments in SB endoscopy have also been paralleled by refinement in dedicated radiological SB imaging technologies. [15] VCE is a potentially important but currently underutilized tool for monitoring of SB CD (small bowel chron's disease). In the latter years, the leading treatment paradigm in IBD has shifted form merely controlling symptoms to reversing the underlying inflammation, as expressed by objective surrogate markers such as laboratory inflammatory markers and endoscopic evidence of mucosal healing. Capsule endoscopy provides meaningful information on the inflammatory burden in the small bowel mucosa, similarly to the role of conventional ileocolonoscopy for the colon and the terminal ileum.[16] Another study by Thakur B et al, 50 patients (mean age 32.8 years; 26 men) with chronic small bowel diarrhea were evaluated clinically, and investigated to determine etiology. The diagnosis of small-bowel diarrhea was based on history, stool volume and associated symptoms. Abdominal pain (n=22, 44%) and weight loss (n=37, 74%) were the most common symptoms, apart from diarrhea. Anemia (70%) and hypoalbuminemia (48%) were other important biochemical abnormalities. Intestinal tuberculosis (26%) and celiac disease (26%) were the most common causes of chronic small-bowel diarrhea. Tuberculosis of intestine and celiac disease are common causes of small-bowel diarrhea in our population. Tropical sprue seems to be a rare cause. [17]

CONCLUSION

Small bowel endoscopy was recommended in cases where colonoscopy yielded negative results, especially for patients presenting with notable weight loss.

REFERENCES

1. Schiller LR, Pardi DS, Sellin JH, et al. Chronic diarrhea: Diagnosis and management. Clin Gastroenterol Hepatol 2017; 15: 182–93.
2. Schiller LR. Definitions, pathophysiology, and evaluation of chronic diarrhoea. Best Pract Res Clin Gastroenterol 2012; 26: 551–62.
3. Green PH, Cellier C. Celiac disease. N Engl J Med. 2007 Oct 25;357(17):1731–43.
4. Rampertab SD, Pooran N, Brar P, Singh P, Green PH. Trends in the presentation of celiac disease. Am J Med. 2006 Apr;119(4):e9–14. (355)
5. Jamma S, Rubio-Tapia A, Kelly CP, Murray J, Najarian R, Sheth S, et al. Celiac crisis is a rare but serious complication of celiac disease in adults. Clin Gastroenterol Hepatol. 2010 Jul;8(7):587–90.
6. Gulati S, Emmanuel A, Ong M et al. Near-focus narrow-band imaging classification of villous atrophy in suspected celiac disease: Development and international validation. GastrointestEndosc 3 Jul 2021; S0016-5107(21)01478-4.
7. Iddan G, Meron G, Glukhovsky A, Swain P. Wireless capsule endoscopy. Nature. 2000;405:417.
8. Nakamura T, Terano A. Capsule endoscopy: past, present, and future. J Gastroenterol. 2008;43:93–99.
9. Cosnes J, Gower-Rousseau C, Seksik P, Cortot A. Epidemiology and natural history of inflammatory

bowel diseases. Gastroenterology. 2011;140:1785–1794.
10. Sadowski DC, Camilleri M, Chey WD, et al. Canadian Association of Gastroenterology clinical practice guideline on the management of bile acid diarrhea. J Can Assoc Gastroenterol 2020; 3: e10–27.
11. Blackwell J, Saxena S, Jayasooriya N, et al. Prevalence and duration of gastrointestinal symptoms before diagnosis of inflammatory bowel disease and predictors of timely specialist review: A population-based study. J Crohns Colitis 15 Jul 2020;. jjaa146.
12. Tome J, Sehgal K, Kamboj AK, et al. The epidemiology of microscopic colitis in Olmsted County, Minnesota: Population-based study from 2011 to 2019. Clin Gastroenterol Hepatol 30 Jun 2021; S1542-3565(21)00691-1.
13. Limsrivilai, J., Sakjirapapong, C., Sattayalertyanyong, O. et al. Diagnostic yield of esophagogastroduodenoscopy, colonoscopy, and small bowel endoscopy in Thai adults with chronic diarrhea. BMC Gastroenterol 21, 417 (2021).
14. Bartel MJ, Stark ME, Lukens FJ. Clinical Review of Small-Bowel Endoscopic Imaging. Gastroenterol Hepatol (N Y). 2014 Nov;10(11):718-726.
15. Skamnelos A, Lazaridis N, Vlachou E, Koukias N, Apostolopoulos P, Murino A, Christodoulou D, Despott EJ. The role of small-bowel endoscopy in inflammatory bowel disease: an updated review on the state-of-the-art in 2021. Ann Gastroenterol. 2021 Sep-Oct;34(5):599-611.
16. Hanauer SB, Kirsner JB. Treat the patient or treat the disease? Dig Dis. 2012;30:400–403
17. Thakur B, Mishra P, Desai N, Thakur S, Alexander J, Sawant P. Profile of chronic small-bowel diarrhea in adults in Western India: a hospital-based study. Trop Gastroenterol. 2006 Apr-Jun;27(2):84-6.