British Journal of Medicine & Medical Research
16(4): 1-5, 2016, Article no.BJMMR.26699
ISSN: 2231-0614, NLM ID: 101570965

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The Role of Anorectal Physiology Tests in Ulcerative Colitis; Challenging 3 Cases

Ozdal Ersoy[1,2*], Eser Vardareli[2], Umit Sekmen[3], Hulya Hamzaoglu[1], Melih Paksoy[3] and Nurdan Tozun[2]

[1]Department of Gastroenterology, Acibadem Fulya Hospital, Crohn's and Colitis Center and Center for Anorectal Diseases, Istanbul, Turkey.
[2]Department of Gastroenterology, School of Medicine, Acibadem University, Istanbul, Turkey.
[3]Department Colorectal Surgery, Acibadem Fulya Hospital, Center for Anorectal Diseases, Istanbul, Turkey.

Authors' contributions

This work was carried out in collaboration between all authors. Author OE designed the study, wrote the first draft of the manuscript. Authors OE and US managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJMMR/2016/26699
Editor(s):
(1) Syed Faisal Zaidi, Department of Basic Medical Sciences, College of Medicine, King Saud Bin Abdulaziz University-HS, National Guard Health Affairs, King Abdulaziz Medical City, Kingdom of Saudi Arabia.
Reviewers:
(1) John K. Triantafillidis, IASO General Hospital, Holargos, Athens, Greece.
(2) Amosy E. M'Koma, Meharry Medical College School of Medicine, USA.
Complete Peer review History: http://sciencedomain.org/review-history/15001

Case Report

Received 29th April 2016
Accepted 24th May 2016
Published 13th June 2016

ABSTRACT

Benign functional anorectal disorders such as faecal incontinence or constipation can be concomitant issues in inflammatory bowel disease (IBD) whether the main disease is under control or not and they lead to negative impact on patients' quality of life. However, reports regarding these anorectal disorders and anorectal physiologic features in patients with IBD are rare and routine diagnostic tests and therapeutic options for these pelvic floor disorders reported by IBD patients are often underused. Anorectal physiology tests are important in patients with inflammatory bowel diseases, to better diagnose any symptomatic and concomitant anorectal functional disorders in order to avoid unnecessary medical or surgical therapies and to tailor the most suitable treatment modalities for the patients. Three challenging patients with ulcerative colitis (UC) under deep remission but having different defecatory and functional bowel problems are summarized here, under the guidance of specific anorectal physiology tests.

**Corresponding author: E-mail: ozdalersoy@gmail.com;*

Keywords: Ulcerative colitis; anorectal physiology test; constipation; faecal incontinence.

1. INTRODUCTION

In patients having IBD, anorectal physiology tests like anorectal manometry, endoanal ultrasonography, rectoanal sensations, defecography and balloon expulsion test may help to diagnose any concomitant functional anorectal problems when the initial symptomatic treatment strategies (apart from IBD treatment) fail [1]. However, reports regarding these anorectal disorders and anorectal physiologic features in patients with IBD are rare and routine diagnostic tests and therapeutic options for these pelvic floor disorders reported by IBD patients are often underused. Bondurri et al. [2] recently took an attention on the diagnosis and investigation of anorectal disorders in patients with IBD in order to choose the better therapeutic options and improve the patients' quality of life. Perera et al. [3] recently concluded that, IBD patients may have persistent but fortunately treatable defecatory symptoms whether the anorectal manifestations of IBD present or not. Therefore assessing sphincter functions together with rectal and pudendal nerve sensations in IBD patients is gaining importance during the last couple of decades [4,5]. In this report, three IBD cases with commonly seen defecatory problems who are properly diagnosed by using anorectal tests which are generally underused in daily gastroenterology practice are going to be mentioned with brief discussions at the end.

2. CASE 1

21 years old male patient with UC, having severe constipation and difficult evacuation since he had the operation of total colectomy and ileal pouch anal anastomosis when he was 19. Before surgery he had severe pan-colitis resistant to steroids and other immune-suppressive therapy and he had mostly loose stool and frequent bloody diarrhoea attacks, finally total colectomy was performed. After the surgery he started to open his bowels once or twice a week, and had hard and pellety stool each time, always had the sensation of incomplete evacuation with no incontinence issues and no other systemic complaints. Pouchoscopy and pouchography showed no inflammatory nor obstructive pathologies. Anorectal physiology test results (Table 1) showed low resting and squeeze pressures and dyssynergic defecation. After three sessions of computerised biofeedback pelvic floor retraining programme and pelvic muscle exercises training, he was completely symptom free and he is on follow-up at present. This patient had no anorectal physiology test done before the surgery so it is unknown whether he had dyssynergic defecation before or this is an acquired problem due to this major colorectal surgery. Actually he had no constipation or evacuation problems before the surgery but diarrhoea attacks due to active UC or loose stool consistency and the presence of normal rectal pressure during pushing could have been masked his obstructive defecation problems. Difficult defecation occurs in patients in patients with IPAA. Perera et al. [6,7] also mentioned that some IBD patients can have defecatory problems despite remission. And also, de-novo obstructed defecation problems after ileal pouch or colo-anal anastomosis or colo-plasty have also been reported as case reports in the literature. However there are limited data on the mechanisms of this condition. Khanna et al. [8] hypothesized that paradoxical contractions may contribute to defecatory difficulty in those patients with mechanical or inflammatory pouch conditions as it is seen in our case. Anorectal physiology testing prior to IPAA operations in IBD patients regardless to the patients' anorectal symptoms, can be a promising tool as a part of evaluation of anal sphincter functions and defecatory patterns to identify a potential post-operatively defecation disorders in advance which can be treatable with biofeedback before and/or after the surgery.

3. CASE 2

42 years old female patient with UC having soiling type incontinence attacks for the last few months but with no urgency nor passive incontinence. She had IPAA 9 years ago due to fulminant colitis and doing well and symptom-free since then. Pouchoscopy control done a year ago and was normal. She had one vaginal birth with episiotomy a year before her colectomy. She used to be constipated before she had the diagnosis of UC however she can open her bowels everyday regularly since her operation. Anorectal physiology test results (Table 1) showed; weak squeeze pressures and abnormal cough reflex, which the involuntary squeeze pressures during cough was lower than voluntary squeeze pressures. Sensory thresholds of the anus and neo-rectum were higher than normal which means electrically hyposensitive anorectum (sensory thresholds are measured by

MMS Neuro-module system; a small electric current from a constant-current generator was passed between the electrodes until the patient felt a sensation often described as tingling or pulsing at the anal canal and mild pelvic pain at the rectum level. The threshold of sensitivity was assessed in the anal canal and rectum). Transrectal ultrasonography and pouchoscopy revealed no pathology involving the anal sphincter and pouch mucosa. Pudendal nerve damage was the most likely factor for weak squeeze pressures and hyposentivity which lead to soiling. EMG-assisted biofeedback and/or neuromodulation therapy (PTNS) in conjunction with dietary changes and loperamide medication is recommended to her but she is lost during follow-up most probably due to high costs of the recommended therapies.

Comprehensive functional and structural assessment is necessary to manage anal incontinence issues in patients with IBD. The causes of rectal and/or anal hyposensitivity are not very clear. Direct injuries like anorectal surgeries to the pelvic or sacral nerves have been implicated as an etiologic factor. IPAA and episiotomy operations performed in our case, could have differed the functional status of the ano-neorectum and the pudendal nerve which caused her soiling, even many years after the operation. Of note, when pudendal nerve gets damaged during these operations, sensitivity of both neorectum and the anal canal may change. In 2007 Tomita et al. [9] also showed significantly hyposensitivity in anal canal in IPAA patients with soiling. For a patient with IBD especially who had previously anorectal surgeries (eg; proctocolectomy and IPAA, fistulectomy or fistulotomy, haemorrhoidectomy and etc), it is recommended to test the rectal/neorectal and anal canal sensitivity, by simple sensory threshold measurement systems in addition to anorectal manometry.

4. CASE 3

58 years old man, with distal UC for the last 6 years. He had haemorrhoidectomy 15 years ago. He has been under deep remission with oral meselazine. He started to have loose stool again

Table 1. Results of the anorectal physiology tests of the cases

Test	Case1/M*	Case2/F*	Case3/M	*Normal /M*	*Normal /F*
Manometry					
Anal canal resting (P1 and P2)	**49**	62	70	*64-80 mmHg*	*56-74 mmHg*
Voluntary contraction (P3 and P4) (squeeze pressure)	**70**	**96**	**140**	*175-211 mmHg*	*124-162 mmHg*
Cough pressure>voluntary contaction	Yes	**No**	Yes	*Yes*	*Yes*
Cough pressure>rectal pressure	Yes	Yes	Yes	*Yes*	*Yes*
Recto-anal inhibitory reflex (RAIR)	Present	Present	Present	*Present*	*Present*
Rectal sensation to balloon distension					
Threshold (first feeling) volume	30	30	**10**	*20-110 ml*	*20-70 ml*
Desire to defecate (urge) volume	100	120	**50**	*60-170 ml*	*35-120 ml*
Maximum tolerated volume	200	180	**100**	*110-320 ml*	*100-260 ml*
Defecation pattern	**Dyssynergic**	Synergic	Synergic		
Balloon expulsion test	Negative	Positive	Not performed	*Positive*	*Positive*
Electrical thresholds					
Anus	7.6	**17**	7.2	*2.4-9.3 mA*	*2.4-9.3 mA*
Rectum	28	**86**	22.4	*14.0-38.0 mA*	*14.0-38.0 mA*

**F: female, M: male*

and urge type faecal incontinence with abdominal pain 3 months ago. Total colonoscopic examination was normal. Conservative measures (fibers, physiotherapy and loperamide) decreased but not completely resolved the incontinence attacks which disturbed the patient's quality of life indeed. Endoanal ultrasonography confirmed intact anal sphincters. Finally in cases of doubt, notwithstanding, he was evaluated by anorectal manometry, which showed low squeeze sphincter pressures with rectal hypersensitivity to inflation by air but normal electrical sensitivity of the rectum and the sphincter (Table 1). These objective results supported the diagnosis of probable irritable bowel syndrome (IBS) which may also be concomitant with IBD and led to urge incontinence under stress. Test results increased the awareness of the patient and motivated him to continue on sphincter physiotherapy and dietary and medical modifications and to decrease the stress factors on his life-style. He is being well-continent after 2-3 months of regular sphincter exercises as well as his prompt IBD treatment and stress-free life. In this case, anorectal manometry is used to measure the anal pressures objectively and to determine the rectal capacity. Endoanal ultrasonography is performed to evaluate any sphincter defects [10]. In IBD patients complaining about faecal incontinence, apart from large sphincter or nerve defects, exclusion of the functional abnormalities, such IBS patients with a small rectal capacity is an important issue which need to be fully evaluated via anorectal physiology tests before any targeted therapy.

5. CONCLUSION

Co-existence of IBD and anorectal motor and sensory disorders may somewhat represent more than expected during daily practice and it is likely that motility and/or perception abnormalities play a role in the clinical pictures of IBD, sometimes complicating the physician's assessment and the patient's lifestyle. Anorectal manometric variables and anorectal sensation have been reported to be abnormal in IBD patients but these studies are not common in daily assessments because, due to IBD diagnosis, little attention is paid to wide spectrum anorectal conditions such as anal incontinence and defecatory difficulties which these patients may also face. Therefore further investigations and therapeutic options are usually underused. Regarding the IBD cases, the evaluation of these disorders with anorectal physiology tests should be taken into account as common and same as the routine diagnostic workflow performed in patients having anorectal symptoms but without IBD, to avoid unnecessary and potentially detrimental medical and surgical therapies.

CONSENT

All authors declare that 'written informed consents' were obtained from the patients except the 2nd case (she's lost on follow-up) for publication of this paper.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/15001