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Irritable bowel syndrome in women with chronic pelvic pain in a Northeast Brazilian city

Síndrome do intestino irritável em mulheres com dor pélvica crônica em uma cidade do Nordeste Brasileiro

Artigo Original

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Pain
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Palavras-chave
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Abstract

PURPOSES: To determine the prevalence of irritable bowel syndrome (IBS) in women with chronic pelvic pain (CPP) and its associated features; to determine whether IBS and CPP constitute the same syndrome. **METHODS:** Cross-sectional population survey with systematic sequential sampling according to census districts in which 1470 women were interviewed with respect to the sample calculation. The participants resided in their own homes, were at least 14 years of age, experienced menarche and presented CPP according to the American College of Obstetrics and Gynaecology. The dependent variable was IBS based on Rome III criteria in women with CPP, and the following independent variables were possibly associated with IBS: age, schooling, duration of pain, sedentary lifestyle, migraine, depression, insomnia, back pain, dysmenorrhea, dyspareunia, depression, history of violence, and intestinal symptoms. The sample was subdivided into groups with and without IBS. After the descriptive analysis of the variables was performed, the respective frequencies were evaluated using GraphPad Prism 5 software. To evaluate the association between the dependent variable and the independent variables, the χ^2 test was used with a significance level of 5%. **RESULTS:** The prevalence of IBS in women with CPP was 19,5%. Pain duration (p=0.03), back pain (p=0.002), history of physical or sexual abuse (p=0.002), and intestinal complaints were more prevalent in the group with IBS and CPP. There was no difference between the groups regarding other criteria. **CONCLUSION:** The data confirmed the literature, identified several aspects that were shared between the pathologies and supported the hypothesis that both pathologies can constitute the same syndrome.

Resumo

OBJETIVOS: Verificar a prevalência da síndrome do intestino irritável (SII) em mulheres com dor pélvica crônica (DPC) e as características associadas; analisar se SII e DPC constituem a mesma síndrome. **MÉTODOS:** Estudo transversal do tipo inquérito populacional com amostragem sistemática sequencial de acordo com os distritos censitários, no qual 1470 mulheres foram entrevistadas conforme o cálculo amostral. Foram selecionadas aquelas residentes no respectivo domicílio, com pelo menos 14 anos de idade, que já haviam tido a menarca e apresentavam DPC de acordo com o Colégio Americano de Obstetrícia e Ginecologia. A variável considerada dependente foi a SII baseando-se nos Critérios de Roma III em mulheres com DPC, e as independentes, possivelmente associadas com a SII foram: idade, escolaridade, tempo de dor, sedentarismo, enxaqueca, depressão, insônia, lombalgia, dismenorreia, dispareunia, depressão, passado de violência e sintomas intestinais. A amostra foi subdividida nos grupos com e sem SII. Após a análise descritiva das variáveis, as respectivas frequências foram avaliadas utilizando *GraphPad Prism 5*. Para determinação da presença de associação entre a variável dependente e as independentes, utilizou-se o teste do χ^2 com nível de significância a 5%. **RESULTADOS:** A prevalência de SII em mulheres com DPC foi de 19,5%. O tempo de dor (p=0,03), a lombalgia (p=0,002), história de abuso físico ou sexual (p=0,002) e as queixas intestinais foram maiores no grupo com SII e DPC. Não houve diferença entre os grupos quanto aos demais critérios. **CONCLUSÃO:** Os dados confirmam a literatura, demonstrando muitos aspectos comuns entre as duas condições e valorizando a hipótese de que elas possam compor a mesma síndrome.

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Introduction

Chronic pelvic pain (CPP) is a debilitating disease that causes major impacts on the quality of life of women[1]. It is defined as non-menstrual, non-cyclical pain over a period of six months or longer of sufficient severity to cause functional disability or lead to the need for medical assistance, located on the pelvis on the anterior abdominal wall or hypogastrium, on the lumbosacral region or in the buttocks[2-3]. Its prevalence varies between 2 to 25%, and its aetiology is often undefined, but usually results from a complex interaction among gastrointestinal, urinary, gynaecological, musculoskeletal, neurological, psychological and endocrine systems and could also be influenced by sociocultural factors[4-6].

All abdominal-pelvic structures may be involved in the etiology of CPP. In a UK study, gastrointestinal diseases have been identified as the major cause of CPP (37%), followed by urological (31%), gynaecological (20%) and myofascial (12%) disorders[7]. Among the gastrointestinal tract lesions associated with CPP, irritable bowel syndrome (IBS) is the most frequent[2]. Suggestive symptoms of IBS are present in 35% of women with CPP[8,9]. In a study by Longstreth et al.[10], almost half of the patients who underwent laparoscopy for CPP and 40% of the patients who underwent elective hysterectomy for the same reason exhibited symptoms compatible with IBS.

IBS is a recurrent gastrointestinal disorder with symptomatology that begins at least six months prior to diagnosis. According to diagnostic criteria (Rome III), IBS is characterised by abdominal pain or discomfort (at least three days per month over the last three months) associated with at least two of the following: improvement with defecation, change in frequency of evacuations and variations in the form (appearance) of stool (criteria)[11]. IBS belongs to a group of functional digestive disorders in which there are no observed morphophysiological, metabolic or infectious alterations[7,8].

IBS often exhibits the following subgroups: IBS with diarrhoea, which is more common in males and is characterised by alternating between loose (>25%) and hardened stools (<25%); IBS with constipation, which is more frequent in females and is characterised by alternating between hard (>25%) and soft stools (<25%), and IBS with mixed habits or a cyclical pattern in which there is hardened and softened stools >25% of the time[11].

IBS and CPP are very common disorders in the general population. Both are similar in prevalence, are more common in the female population and coincide with mental disorders and with a history of physical or sexual abuse[9]. Researchers have questioned the differentiation of these two conditions and suggest that they may be the same syndrome; however, further studies are needed to for evidence[12,13].

Most gynaecologists have difficulty recognising bowel symptoms and, therefore, do not establish a diagnosis of IBS[8,12-14]. In contrast with other syndromes that are usually based on clinical and pathological models, the symptoms of IBS are based on subjective accounts of patients and lack organic explanations, which increases the difficulty of the diagnosis.

This research aims to identify the prevalence of IBS in women with CPP in a sample population of a large city in Northeast Brazil, by characterising women with IBS and comparing women with IBS with carriers of CPP without IBS.

Methods

The population survey was conducted among women living in the city of São Luís, from March 2009 to May 2010. The investigation is a component of a larger study titled "Prevalence and factors associated with chronic pelvic pain in women of São Luís, Maranhão". All the women in the study spontaneously agreed to participate by signing the consent form, which was previously approved by the Research Ethics Committee of the University Hospital of Universidade Federal do Maranhão (UFMA).

A formula for finite populations was applied to calculate the sample size. The formula estimated the population of women in a year[15] with a confidence level of 95%. The relative error of the estimate did not exceed 25% (±1%) of the estimated prevalence rate of CPP in 4%, with a possible 15% loss for the calculus effect[16], which resulted in a sample size of 1470 women.

Data collection was performed using a systematic sampling sequence. Neighbourhoods were allocated alphabetically in all seven census districts that make up the city, and an interval withdrawal of three was selected. In each census district, 210 women were selected. In each neighbourhood, the houses selected for the survey also obeyed the interval range of three (for example, in house one, the women were interviewed, in houses two and three, the women were not interviewed, and the women in the next house were interviewed). Houses without women to be interviewed were skipped, and the survey was continued at the next house according to the number of the house.

The participants resided in their own homes, were at least 14 years old, experienced menarche and presented CPP according to the American College of Obstetrics and Gynaecology in 2004[2]. Data were collected and recorded on a questionnaire completed by a team of 15 previously trained university students from UFMA who evaluated the questions and possible answers. To evaluate the method,

we performed a pilot test with the questionnaire with 50 women in the coverage area of the research.

IBS was analysed as the dependent variable based on Rome III[11] criteria in women with CPP. The independent variables possibly associated with IBS were age, education, duration of pain, sedentary lifestyle, migraine, depression, insomnia, back pain, dysmenorrhea, dyspareunia, depression, history of sexual or physical violence, more frequent bowel complaints, stool characteristics and frequency of bowel movements.

The ages in years were grouped into age groups. Education was classified according to the full years of study with approval. The duration of pain complaints was classified as up to 6 months, longer than 6 months and under 12 months or longer than 12 months. Participants who did not perform regular physical activities at least three times a week were considered sedentary. The presence of migraines was defined when the participants reported that migraine pain limited their ability to perform normal activities at least once a month. Depression was defined when the participant wanted to do nothing and experienced spontaneous crying, a desire to isolate themselves or lonely feelings at least once in the last 30 days.

Insomnia was considered as the presence of a sleep disorder with difficulty falling asleep or waking up with a feeling that the individual would need sleep more. Low back pain was considered as the presence of pain in the lumbosacral region with or without radiating pain that improved with rest, analgesics or nonhormonal anti-inflammatory drugs.

The presence of dysmenorrhea was defined as effects on the premenstrual period with variable intensity between menstrual cycles, not including progressive pain, with spontaneous resolution within 2 days after the cessation of menstruation. Dyspareunia, regardless of intensity, was defined as tolerable pain that interferes with intercourse, with an intensity strong enough to prevent intercourse.

Violence was defined as any attitude or behaviour suffered by a person or a group of people that somehow provoked physical or emotional damage (loss) and occurred inside the home, with family members or in the work environment. Violence was characterised as physical (physical strength, weapon or repetitive punishment) or sexual (fondling or penetration).

Abdominal symptoms were characterised by the number of stools with a minimum of two to three times per week and a maximum of three times a day. Faeces were characterised as liquid (elimination without control), pasty (with control and without difficulty in elimination) and hard (with great difficulty and sometimes hurting the anus). Other intestinal complaints included the presence or absence of constipation (longer than two days without a bowel movement), diarrhoea (uncontrolled disposal or urgency), bloating, mucus/blood in stool and daily elimination of flatus.

The group with CPP was grouped into two categories: participants with IBS and participants without IBS. After descriptive analysis of the variables and their respective frequencies (absolute and relative), the sample with CPP (16.7% prevalence) was grouped in relation to the groups with and without IBS using the GraphPad Prism 5 program. To determine the presence of an association between the dependent variable and the independent variables, we used the nonparametric χ^2 test of independence and Fisher's exact test with a significance level of 5% ($\alpha \leq 0.05$).

Results

We selected 246 women diagnosed with CPP after considering the inclusion criteria. The prevalence of IBS was 19.5% (48) in women with CPP. Table 1 shows the distribution and statistical analysis of women with CPP associated or not associated with IBS.

In both groups, the majority of women were between 30 and 40 years of age, with higher education backgrounds and complaints of pain longer than 12 months.

Variables including physical inactivity (81.2%), migraine (54.2%), depression (58.3%), insomnia (43.7%), back pain (60.4%), dysmenorrhea (85.4%) and previous history of violence (27.1%) were more prevalent in the group with IBS, except for dyspareunia (51%), which was more prevalent in the group without IBS (Table 1).

The most common frequency of bowel movements was three or more times a week in both groups. Hard (60.4%) stools were more common in the group with IBS, and pasty (56.1%) stools were more common in the group without IBS. The most prevalent intestinal complaint in both groups was constipation (Table 2).

Discussion

The worldwide prevalence of IBS is between 10 to 20% among adolescents and adults[17]. The prevalence of IBS associated with CPP varies from 35 to 80%[8,9,11], which is higher than the prevalence observed in the present study (19.5%). The difference may be attributed to the fact that the present study was a population-based survey, in contrast to other studies. In studies conducted in hospitals, gynaecology clinics or primary care, it is assumed that women with CPP seek medical care because they present a more pronounced symptomatology likely associated with comorbidities.

Carriers of CPP and IBS are more often subjected to extensive diagnostic investigations and may present

Table 1. Socio-demographic and behavioural characteristics of women with chronic pelvic pain with or without irritable bowel syndrome

Variables	CPP				p-value
	With IBS (n=48)		Without IBS (n=198)		
	n	%	n	%	
Age (years)					
<21	5	10.4	50	25.2	NS
21–30	25	52.1	81	40.9	NS
31–40	11	22.9	36	18.38	NS
41–49	7	14.6	31	15.6	NS
Schooling					
Middle school	10	20.8	49	24.7	NS
High school	31	64.6	115	58.1	NS
Higher education	4	8.3	31	15.7	NS
Post graduation	3	6.3	3	1.5	NS
Pain duration (months)					
6	3	6.2	16	8.1	NS
12	13	27.1	84	42.4	NS
>12	32	66.7	98	49.5	0.03
Sedentary lifestyle	39	81.2	143	72.2	NS
Migraine	26	54.2	82	41.4	NS
Depression	28	58.3	90	45.4	NS
Insomnia	21	43.7	80	40.4	NS
Low back pain	29	60.4	71	35.8	0.002
Dysmenorrhea	41	85.4	149	72.2	NS
Dyspareunia	21	43.7	101	51.0	NS
Violence	13	27.1	18	9.1	0.002

CPP: Chronic Pelvic Pain; IBS: Irritable Bowel Syndrome; NS: not significant.

Table 2. Characteristics of women with chronic pelvic pain with or without irritable bowel syndrome in terms of abdominal symptoms

Variables	CPP				p-value
	With IBS (n=48)		Without IBS (n=198)		
	n	%	n	%	
N° of evacuations					
3 times a week	30	62.5	125	63.1	NS
2 times a week	15	31.2	63	31.8	NS
3 times a day	3	6.2	10	5.0	NS
Characteristic of faeces					
Liquid	0	0	2	1.0	NS
Pasty	19	39.6	111	56.1	NS
Hard	29	60.4	85	42.9	0.02
Intestinal complaints					
Yes					
Constipation	30	62.5	58	29.3	<0.0001
Diarrhoea	5	10.4	5	2.5	0.02
Abdominal distention	17	35.4	24	12.1	0.0003
Mucus and blood in stool	5	10.4	6	3.0	0.04
Excessive flatulence	8	16.7	14	7.1	0.04
No	8	16.7	112	56.6	<0.0001

CPP: Chronic Pelvic Pain; IBS: Irritable Bowel Syndrome; NS: not significant.

more severe pain than participants without IBS[2]. These carriers may belong to a group of less severe cases of CPP. Investigations of IBS in participants with CPP diagnosed in care centres may present a selection bias.

A study based on a population survey conducted in the state of Minnesota in the United States found a prevalence of IBS of 26% in women with CPP. However, the definition criteria of IBS were more comprehensive and encompassed Manning, Rome I and Rome III Criteria. When the definition of IBS was confined to the Rome III criteria, the prevalence was only 7%[13].

IBS affects the greatest number of people between 30 and 40 years of age[13,18] but can occur in all age groups including children and individuals older than 50 years of age[19]. IBS was also prevalent in women between 20 and 30 years of age, but there was no significant difference between the two groups.

Women aged greater than 50 years were excluded from the study because the warning signs of IBS patients in this age group often warrant a colonoscopy to rule out other organic causes such as colon cancer[19,20], which would be unviable in the present study.

The lack of research of other warning signs of IBS (hematochezia, persistent diarrhoea, nocturnal symptoms, considerable weight loss, fever and a family history of organic digestive diseases) could be a negative factor in this work. However, the lack of other research does not invalidate the findings because establishing the diagnosis of IBS after extensive testing negative for organic diseases is considered to be an outdated practice[11,14-19].

Most women had an incomplete or complete high school degree (64.6%). In a study conducted in North Carolina, USA, 53% of IBS patients had higher education or post-graduate education[8]. Although the prevalence of CPP is estimated to be higher in developing countries compared with developed countries[4], socioeconomic status, which is expressed in schooling, appears to be the determining factor in Northeast Brazil compared with other factors.

The duration of pain was longer in women with CPP and IBS (66.7% reported more than 12 months of evolution). This finding may result from the difficulties experienced by many experts in the identification of IBS as a cause of CPP and delayed diagnosis and initiation of appropriate treatments for the disease[8,12-14].

Sedentary lifestyle was reported by more than 80% of women. Physical inactivity is directly associated with pain because it is related to weight gain, increasing pressure and injuries of the pelvis, ligaments, muscles and tendons, which may perpetuate visceral pain. A sedentary lifestyle may also cause atrophy of muscle elements in individuals subjected to poor posture activities, including prolonged sitting, which may contribute to increased pain[21]. In this study, high prevalence of physical inactivity

was observed in women with CPP regardless of the presence or absence of IBS.

Migraine was a common finding among women with IBS (54.2%). A large body of evidence supports a common pathophysiology between IBS, migraines and fibromyalgia, such as a deficiency of endogenous endocannabinoids. Endocannabinoids interfere with abdominal peristalsis, the release of secretions into the intestinal lumen, pain, headache intensity and afferent impulses on the spinal cord[22]. In a study conducted in a large health care organisation, migraines were present in 51.88% of cases of IBS[18]. In this study, there was no significant difference between the groups.

Studies have shown a high incidence of physical and sexual abuse among women with CPP and IBS[2,5,11,12,14], but the exact mechanism underlying the development of pain after abuse continues to be investigated. Some authors have suggested that somatic memory of pain results in visceral hypersensitivity[23]. British researchers found a higher frequency of physical and sexual abuse, mood disorders and anxiety among patients with CPP and IBS compared with a group with only IBS[17]. In this study, 27.4% of women with CPP and IBS reported past abuse, which was significantly higher compared with the group of women with CPP and without IBS.

Depression and physical and sexual violence are interacting factors between the two pathologies[12]. In the present study, the prevalence of depression was higher in the women with IBS (58.3%) compared with the women without IBS (45.4%). A study that investigated the characteristics of IBS in health centres in California reported the prevalence of depression as 55,1%[18]. The prevalence of psychiatric disorders in IBS patients in tertiary care centres in the U.S. was similar to the prevalence observed in this study, which ranged from 40 to 90%[24].

Functional Gastrointestinal Disorders (FGDs) represent the only subset of digestive changes with strong psychiatric implications beyond simple psychic comorbidities or psychosocial distress, which are concomitant with these disorders. There is increasing evidence that the psychopharmacological and psychotherapeutic treatments are very effective for treating FGDs and, in many cases, exceed the standard medical treatment[11].

The frequency of low back pain was higher in the group of women with IBS and CPP. The coexistence of IBS and back pain has been reported in the literature[25,26] and may be related to mood states or can be a presentation of fibromyalgia.

Dysmenorrhea and dyspareunia are more prevalent in patients with CPP and gastrointestinal or urological complaints[2]. However, in this study, no significant differences were observed between the groups of women with CPP with and without IBS.

The most common intestinal complaints were constipation (62.5%) and abdominal distension (35.4%). Mazur et al.[27] suggest that the influence of the sympathetic system in the brain-gut axis is probably responsible for the disturbances in myoelectric activity in patients with IBS, and may cause constipation and bowel symptoms in this population.

It appears that the most prevalent subtype of IBS was related to constipation. This corroborates the literature, which states that constipated IBS is more prevalent among women[11]. The definition of the subtype based solely on symptoms without establishing a temporal issue, such as the percentage of constipated bowel movements, is a simplistic approach. However, the predominance of hard stool in the population of IBS is an additional factor that confirms the above hypothesis.

A positive aspect of this study was the design as a population-based investigation rather than a sample of women seeking gynaecologic or gastrointestinal care, which minimised the selection bias.

These findings suggest that CPP and IBS share a common pathophysiology. Few variables expressed any significant difference between the groups. The variables that were different between the groups (e.g., intestinal complaints) did not exclude the possibility that both conditions may constitute the same syndrome. These results remain speculative, and further studies are needed for proof. IBS should be recognised as an important cause of CPP, and proper identification of comorbidities associated with CPP is important for early diagnosis and treatment to reduce the costs of health services and improve the quality of life and well-being of women.

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Referências

1. Nogueira AA, Reis FJC, Poli Neto OB. Abordagem da dor pélvica crônica em mulheres. Rev Bras Ginecol Obstet. 2006;28(12):733-40.
2. ACOG Committee on Practice Bulletins–Gynecology. ACOG Practice Bulletin No. 51. Chronic pelvic pain. Obstet Gynecol. 2004;103(3):589-605.
3. Campbell F, Collett BJ. Chronic pelvic pain. Br J Anaesth. 1994;73(5):571-3.
4. Latthe P, Latthe M, Say L, Gulmezoglu M, Khan KS. WHO systematic review of prevalence of chronic pelvic pain: a neglected reproductive health morbidity. BMC Public Health. 2006;6:177.
5. Howard FM. Chronic pelvic pain. Obstet Gynecol. 2003;101(3):594-611.
6. Zondervan K, Barlow DH. Epidemiology of chronic pelvic pain. Baillieres Best Pract Res Clin Obstet Gynaecol. 2000;14(3):403-14.
7. Cheong Y, William Stones R. Chronic pelvic pain: aetiology and therapy. Best Pract Res Clin Obstet Gynaecol. 2006;20(5):695-711.
8. Williams RE, Hartmann KE, Sandler RS, Miller WC, Savitz LA, Steege JF. Recognition and treatment of irritable bowel syndrome among women with chronic pelvic pain. Am J Obstet Gynecol. 2005;192(3):761-7.
9. Walker EA, Gelfand AN, Gelfand MD, Green C, Katon WJ. Chronic pelvic pain and gynecological symptoms in women with irritable bowel syndrome. J Psychosom Obstet Gynaecol. 1996;17(1):39-46.
10. Longstreth GF. Irritable bowel syndrome and chronic pelvic pain. Obstet Gynecol Surv. 1994;49(7):505-7.
11. Longstreth GF, Thompson WG, Chey WD, Houghton LA, Mearin F, Spiller RC. Functional bowel disorders. Gastroenterology. 2006;130(5):1480-91.
12. Matheis A, Martens U, Kruse J, Enck P. Irritable bowel syndrome and chronic pelvic pain: a singular or two different clinical syndrome? World J Gastroenterol. 2007;13(25):3446-55.
13. Choung RS, Herrick LM, Locke GR 3rd, Zinsmeister AR, Talley NJ. Irritable bowel syndrome and chronic pelvic pain: a population-based study. J Clin Gastroenterol. 2010;44(10):696-701.
14. Longstreth GF. Irritable bowel syndrome. Diagnosis in the managed care era. Dig Dis Sci. 1997;42(6):1105-11.
15. Instituto Brasileiro de Geografia e Estatística. Contagem da população 2007 [citado 2008 Out 3]. Disponível em: http://www.ibge.gov.br/home/estatistica/populacao/contagem2007/contagem.pdf
16. Mathias SD, Kuppermann M, Liberman RF, Lipschutz RC, Steege JF. Chronic pelvic pain: prevalence, health-related quality of life, and economic correlates. Obstet Gynecol. 1996;87(3):321-7.
17. Longstreth GF. Definition and classification of irritable bowel syndrome: current consensus and controversies. Gastroenterol Clin North Am. 2005;34(2):173-87.
18. Ladabaum U, Boyd E, Zhao WK, Mannalithara A, Sharabidze A, Singh G, et al. Diagnosis, comorbidities, and management of irritable bowel syndrome in patients in a large health maintenance organization. Clin Gastroenterol Hepatol. 2012;10(1):37-45.
19. Miszputen SJ, Ambrogini Junior O. Síndrome do intestino irritável. Compacta: Temas Gastroenterol. 2008 maio:5-22.
20. Brazilian Study Group of Inflammatory Bowel Diseases. Consensus guidelines for the management of inflammatory bowel disease. Arq Gastroenterol. 2010;47(3):313-25.
21. Santos Júnior JC. Dor posterior baixa e dor pélvica: o que interessa ao proctologista? Rev Bras Coloproctol. 2009;29(3):393-403.
22. Russo EB. Clinical endocannabinoid deficiency (CECD): can this concept explain therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions? Neuro Endocrinol Lett. 2004;25(1-2):31-9.
23. Spiller RC. Inflammation as a basis for functional GI disorders. Best Pract Res Clin Gastroenterol. 2004;18(4):641-61.
24. Drossman DA, Camilleri M, Mayer EA, Whitehead WE. AGA technical review on irritable bowel syndrome. Gastroenterology. 2002;123(6):2108-31.
25. Macedo DD. Lombalgias. Cienc Cult. 2011;63(2):42-4.
26. Catapani WR. Conceitos atuais em síndrome do intestino irritável. Arq Méd ABC. 2004;29(1):19-21.
27. Mazur M, Furgala A, Jablonski K, Mach T, Thor P. Autonomic nervous system activity in constipation-predominant irritable bowel syndrome patients. Med Sci Monit. 2012;18(8):CR493-9.