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Meal induced rectosigmoid tone modification: a low caloric meal accurately separates functional and organic gastrointestinal disease patients

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Background and aims: Diagnosis of irritable bowel syndrome (IBS) is based on arbitrary criteria due to the lack of an accurate diagnostic test. The aim of this study was to evaluate whether rectosigmoid tone modification after a meal represents an accurate diagnostic approach.

Methods: In a secondary care setting, 32 constipation predominant and 24 diarrhoea predominant IBS patients, 10 functional diarrhoea and 10 functional constipation patients, 29 organic gastrointestinal disease patients, and 10 healthy volunteers underwent a rectal barostat test to measure fasting and postprandial rectosigmoid tone. Rectosigmoid response was assessed following three meals containing different amounts of calories: 200 kcal, 400 kcal and 1000 kcal.

Results: After 200 kcal, healthy volunteers and patients with organic diseases showed a reduction in rectosigmoid volume of at least 28% of fasting volume, indicating a meal induced increase in muscle tone. In contrast, patients with diarrhoea predominant IBS showed dilation of the rectosigmoid colon, indicative of reduced tone, and patients with constipation predominant IBS showed a mild volume reduction or no modification. Functional diarrhoea and constipation patients showed rectosigmoid tone modification resembling that of the corresponding IBS subtype. A 400 kcal meal normalised rectosigmoid tone in more than half of the constipation predominant IBS patients but none of the diarrhoea predominant IBS patients. In contrast, a 1000 kcal meal normalised tone response in all IBS patients. Sensitivity of the test was 100%, specificity 93%, positive predictive value 96%, and negative predictive value 100%.

Conclusion: A postprandial reduction in rectosigmoid tone of at least 28% of fasting value after a low caloric meal accurately separates organic and functional gastrointestinal disease patients. This parameter may therefore be used in the positive diagnosis of IBS.

Irritable bowel syndrome (IBS) is a very common functional disorder of the gastrointestinal tract which may present with two distinct clinical patterns: in association with abdominal pain and other symptoms, such as bloating or mucus per rectum, it is possible to detect the presence of constipation, depicting a constipation predominant form (IBS-C), or diarrhoea, in a diarrhoea predominant subtype (IBS-D).¹ A subgroup of patients may also be characterised by an alternating bowel which, in accordance with the Rome II working report,¹ is defined by the presence of criteria for both diarrhoea and constipation. The pathophysiology of IBS is not completely known. Abnormalities of gut motility, visceral perception, and psychological aspects are currently considered the main mechanisms involved.² However, such a different pattern of clinical presentation suggests that different mechanisms may act at neural and intestinal levels to induce symptoms. Therapeutic strategies are the opposite for these two clinical forms as drugs acting on 5-hydroxytryptamine (5-HT)₃ receptors, effective in intestinal motility inhibition, are used for IBS-D^{3–7} and drugs acting on 5-HT₄ receptors, effective in the stimulation of intestinal motility,^{8–11} are used for IBS-C.

A major problem with this condition is diagnosis. Arbitrary criteria have been proposed¹² and then revised¹³ to achieve satisfactory diagnostic accuracy. The need for arbitrary criteria is based on the non-availability of an accurate test for a positive diagnosis. Indeed, a recently proposed diagnostic test, consisting of the evaluation of sensitivity thresholds during mechanical distension of the rectum,¹⁴ was criticised due to several technical aspects that make it inadequate and not reproducible.¹⁵ An alternative approach

could consider bowel habit: increased postprandial rectal tone is related to the occurrence of postprandial defecation¹⁶; when contractions of the sigmoid colon present stool to the rectum¹⁷ in a high tone status, an increase in parietal tension occurs, heightening sensation, and providing the call to stool. It is possible that, in patients with IBS, alterations of the modulation of both sensation and motor activity at the intestinal level¹⁸ may induce an alteration of this physiological sequence.

Previous studies have already analysed this topic, both in healthy volunteers^{16–19–22} and in IBS patients^{23–28} but conflicting results have been reported. The discrepancy may be explained on the basis of differences in the protocols used. In particular, the barostat balloon was positioned in the anorectum,^{16–23–24} transverse,^{19–21} descending,^{19–22–27–28} or sigmoid colon.^{20–25–26} It should be noted that rectal balloon volume may be affected by both anorectal reflexes which may interfere with measurement and adaptive relaxation of the rectum.^{23–24} In contrast, no spontaneous fluctuation of muscle tone was described at the sigmoid level.²⁰ Another major difference depends on caloric load: most of the available studies used a 1000 kcal test meal,^{16–21–22–24–27–28} some studies used a 600 kcal meal,^{16–19} and in one study a 225 kcal meal was used.²³

Our working hypothesis was that a high level stimulus may mask the alteration of gastrocolonic reflex connected to a low

Abbreviations: IBS, irritable bowel syndrome; IBS-C, constipation predominant irritable bowel syndrome; IBS-D, diarrhoea predominant irritable bowel syndrome; 5-HT, 5-hydroxytryptamine; MDP, minimal distending pressure

grade modification of the sensitivity threshold. We therefore modified some aspects of the protocol for evaluation of postprandial rectal tone modification for this study, by positioning the balloon at a more proximal level (that is, the rectosigmoid junction) and by using a low caloric meal in order to verify whether the sensorimotor defect of IBS patients is revealed by a stimulus characterised by an intensity lower than that used so far. A group of organic patients was also enrolled to serve as a pathological control group. We then applied our diagnostic cut off in a prospective series of both functional and organic patients in order to evaluate its diagnostic accuracy.

MATERIALS AND METHODS

Part A

Evaluation of rectosigmoid tone modification after a meal

Thirty patients with IBS took part in the study. All patients were diagnosed on the basis of Rome II criteria¹ and were ambulatory patients attending the outpatient clinic of our secondary care hospital. IBS subtypes were determined using the supportive symptoms indicated by the Rome II working report: (a) fewer than three bowel movements in a week; (b) more than three bowel movements in a day; (c) hard or lumpy stools; (d) loose/mushy or watery diarrhoea; (e) straining during a bowel movement; (f) urgency; (g) feeling of incomplete bowel movement; (h) passing mucus during a bowel movement; and (i) abdominal fullness, bloating, or swelling. IBS-C was defined by the presence of one or more of (a), (c), and (e); IBS-D was defined by the presence of one or more of (b), (d), and (f). None had previously suffered from an alternating bowel, defined as the presence of at least one criterion for diarrhoea (b, d, f) and at least one criterion for constipation (a, c, e). Moreover, the presence of an organic disease was previously excluded by a careful anamnestic evaluation, clinical examination, colonoscopy or barium enema, abdominal ultrasound, routine biochemistry tests, and microbiological stool test.

Eighteen patients were consecutive IBS-C patients (12 females; mean age 34 (5) years (range 19–46)) and the other 12 were consecutive IBS-D patients (six females, mean age 35 (5) years (range 20–48)). Table 1 shows the prevalence of associated symptoms. Only one patient suffered from an urge-type constipation.

A group of 10 healthy volunteers, members of the medical or paramedical staff or students (seven females; mean age 36 (3) years (range 20–45)) were also enrolled as a control group. None had a history or symptoms of gastrointestinal disease.

All subjects were studied after a 12 hour fast. A preliminary gentle, non-chemical, up to 2 litre tap water enema was performed to avoid surface damage while ensuring rectal emptying.^{16–29} Patients then underwent a rectal barostat test to evaluate fasting and postprandial rectosigmoid tone after administration of a low volume, low caloric meal (200 ml, 200 kcal).

Effect of variable caloric intake on recto-sigmoid tone

On a separate day, 14 IBS patients, randomly chosen among the group who had undergone the previous evaluation, and the group of 10 healthy volunteers, previously studied, underwent further evaluation aimed at defining the effect of variable caloric intake on rectosigmoid tone. Seven had IBS-C (five females; mean age 31 (3) years (range 21–40)) and seven IBS-D (four females; mean age 32 (4) years (range 20–39)) patients. A second barostat test was therefore performed in order to monitor tone modification after administration of a meal containing a caloric load which was double (400 ml, 400 kcal) that of the previous test. One week later, five IBS-C and five IBS-D of these patients were also tested after 1000 kcal.

Part B

Evaluation of the specificity of rectosigmoid tone response to a meal

A group of 15 patients (eight females; mean age 38 (5) years (range 24–59)) with organic diseases took part in this evaluation. Diagnoses were Crohn's disease (n = 3), ulcerative colitis (n = 3), colonic polypsis (n = 3), chronic pancreatitis (n = 3), and HCV related chronic hepatitis (n = 3). All patients were studied during a phase of remission of their disease. Ten subjects with functional constipation (seven females; mean age 33 (5) years (range 21–44)) and 10 with functional diarrhoea (six females; mean age 31 (3) years (range 21–47)) also took part in the study as two further control groups. All patients underwent rectosigmoid tone measurement during fasting and postprandially after administration of a 200 kcal meal.

Table 1 Frequency and severity of associated symptoms in 18 patients with constipation predominant irritable bowel syndrome (IBS-C) and 12 patients with diarrhoea predominant irritable bowel syndrome (IBS-D)

IBS-C				
	2/week	1/week	Less than 1/week	
Bowel frequency	9 (50%)	4 (22%)	5 (28%)	
	Very hard	Hard	Soft	Watery
Stool consistency	6 (34%)	12 (66%)	0 (0%)	0 (0%)
	Absent	Mild	Relevant	Severe
Urgency	18 (100%)	0 (0%)	0 (0%)	0 (0%)
Bloating	0 (0%)	2 (11%)	10 (56%)	6 (33%)
Discomfort	0 (0%)	3 (17%)	12 (66%)	3 (17%)
Pain	0 (0%)	9 (50%)	3 (17%)	6 (33%)
IBS-D				
	4-5/day	6-8/day	More than 8/day	
Bowel frequency	6 (50%)	4 (33%)	2 (17%)	
	Very hard	Hard	Soft	Watery
Stool consistency	0 (0%)	0 (0%)	8 (66%)	4 (34%)
	Absent	Mild	Relevant	Severe
Urgency	11 (92%)	0 (0%)	1 (8%)	0 (0%)
Bloating	0 (0%)	1 (8%)	2 (16%)	9 (76%)
Discomfort	0 (0%)	2 (16%)	7 (58%)	3 (26%)
Pain	0 (0%)	1 (8%)	5 (41%)	6 (51%)

In Crohn's disease and ulcerative colitis patients, IBS was excluded on the basis of detailed clinical history taking, with particular attention paid to the presence of functional symptoms during remission phases. None suffered from IBS-like symptoms, apart from occasional mild bloating.

Part C

Evaluation of diagnostic accuracy of the test

To evaluate the applicability of this test in the diagnosis of IBS, we performed a prospective study on a group of consecutive patients with bowel habit alterations. In addition to the other tests necessary for diagnosis, 40 patients (22 females; mean age 38 (5) years (range 22–55)) underwent a rectosigmoid barostat test. The final diagnoses were IBS-C ($n = 14$), IBS-D ($n = 12$), colonic diverticulosis ($n = 6$), Crohn's disease ($n = 3$), chronic pancreatitis ($n = 3$), coeliac disease ($n = 1$), and giardiasis ($n = 1$). Rectosigmoid tone was measured with a barostat test during fasting and after a caloric load of 200 kcal.

All functional patients were studied during a symptomatic phase of their disease. Patients with Crohn's disease were in a mild phase of clinical activity, patients with chronic pancreatitis had untreated pancreatic insufficiency, the patient with untreated coeliac disease had no diarrhoea and was diagnosed on the basis of iron deficiency anaemia, while the patient with giardiasis had recurrent diarrhoea and abdominal pain.

None of the enrolled subjects had previously undergone therapeutic courses of antibiotics or drugs interfering with gut motility and sensitivity in the month preceding the study. All enrolled patients gave their informed consent to the study which was approved by the local ethics committee.

Patients participating in parts B and C were newly enrolled subjects, not taking part in part A

Rectosigmoid barostat test

The rectosigmoid barostat test measured fasting and postprandial rectosigmoid tone. After an overnight fast, a double lumen polyvinyl tube (Salem sump tube 14 Ch.; Sherwood Medical, Norfolk, Madison County, Nebraska, USA) with an adherent infinitely compliant plastic bag (800 ml capacity, 17 cm maximal diameter), finely folded, was inserted in the rectum and secured with adhesive tape. The distal border of the barostat bag was 12 (3) cm (range 11–18) from the anal verge. Fluoroscopic control with approximately 150 ml of air in the balloon ensured correct positioning. At the end of each test, a second control was performed to exclude dislocation of the balloon. None of the subjects had a megarectum or dolichosigmoid. The polyvinyl tube was connected to a computer driven programmable volume displacement barostat device (G&J Electronics Inc., Toronto, Ontario, Canada). The barostat device maintains a constant preselected pressure within the bag, changing the bag volume of air, by an electronic feedback mechanism. The barostat monitors rectal motor activity (contraction or relaxation) as changes in intrarectal volume (reduction or increase, respectively) at a constant intrabag pressure.³⁰ To initially unfold the balloon, it was inflated with a fixed volume of 250 ml of air for two minutes with the subject in a recumbent position, and then deflated completely. After a 10 minute equilibration period, patients were asked to maintain the right lateral position, in accordance with previous papers.^{29–31} We do not believe this position affected the results for at least two reasons: firstly, and this applies to diarrhoeic patients, the balloon did not completely occlude the colonic lumen, thus allowing transit of liquids, as shown by perfusion of an 80 ml bolus of radiolabelled solids and liquids in healthy volunteers¹⁹; secondly, and this applies to constipated patients, a tap water enema was performed in order to minimise the effect

of large amounts of faeces in the distal colon. After minimal distending pressure (MDP) determination, intraballoon pressure was set at MDP+2 and fasting rectosigmoid tone was measured for a 30 minute period; a liquid caloric meal (1 kcal per ml, 19% fat, 41% carbohydrate, 40% protein) was then given orally. A total of 200 ml, 400 ml, or 1000 ml were administered according to the protocols previously indicated. Tone measurement continued for a further 60 minutes to evaluate meal induced modifications.

Statistical analysis

Rectosigmoid tone was assessed by monitoring bag volume with intrabag pressure set at MDP+2 mm Hg. The barostat measures bag volume and pressure at a frequency of 1/s: mean balloon volume for consecutive five minute intervals was considered to calculate the time-volume curve for each patient. Fasting rectosigmoid tone was calculated as the mean volume of the 30 minute fasting period and postprandial tone considering the mean of the whole 60 minute postprandial period. This latter parameter was expressed as per cent modification: absolute values seemed inappropriate, being too dependent on MDP values.

Data are presented as mean (SD). Time-volume curves of patients and healthy volunteers were compared by analysis of variance (ANOVA). Differences were considered significant at the 5% level.

RESULTS

Part A

Evaluation of rectosigmoid tone modification after a meal

Mean MDP was similar in the three groups of subjects (8 (1) mm Hg in IBS-C, 9 (1) mm Hg in IBS-D and 7 (1) mm Hg in healthy volunteers; $p = \text{NS}$, ANOVA). Figure 1 shows mean rectosigmoid volume during fasting and after a meal in IBS patients and healthy volunteers. Mean fasting rectosigmoid volume in IBS-C (117 (43) ml) and IBS-D (113 (44) ml) patients showed no significant difference ($p = \text{NS}$, ANOVA) compared with healthy volunteers (123 (28) ml).

In contrast, rectosigmoid response to the 200 kcal meal was extremely different. As expected, in healthy volunteers mean postprandial volume (76 (14) ml, considering the mean of the whole postprandial period) was significantly lower ($p < 0.001$) than the fasting value, suggesting increased

Figure 1 Mean rectal volume during fasting and after administration of a 200 kcal meal in constipation predominant irritable bowel syndrome (IBS) and diarrhoea predominant IBS patients, and healthy volunteers. The meal was administered after 30 minutes of fasting measurement. Data are expressed as mean (SEM).

Figure 2 Per cent modification of rectal volume after ingestion of a 200 kcal meal in constipation predominant irritable bowel syndrome (IBS) and diarrhoea predominant IBS patients, and healthy volunteers. A cut off of -28% (broken horizontal line) accurately separates IBS patients and healthy volunteers. Horizontal bars represent mean values.

tone. Reduction in balloon volume occurred very rapidly, being evident in 11 (2) minutes after the meal and continuing throughout the postprandial recording as mean balloon volume during the second postprandial 30 minute period (volume 56 (19) ml) was significantly lower than mean balloon volume during the first postprandial 30 minute period (volume 95 (11) ml; $p = 0.001$).

Considering mean postprandial volume (the mean of the whole 60 min period), mean per cent reduction in rectosigmoid volume in healthy volunteers was -38 (7)% and all subjects showed a reduction of at least -28% in mean fasting volume (fig 2).

In IBS-C patients, ingestion of a 200 kcal caloric meal induced a mild or no modification of mean postprandial intraballoon volume (116 (49) ml, mean of the postprandial 60 minutes), thus suggesting a minor modification of tone (fig 1). Mean balloon volume during the first postprandial 30 minute period (115 (50) ml) was similar to mean balloon volume during the second postprandial 30 minute period (117 (48) ml). Mean per cent postprandial modification of rectosigmoid volume in IBS-C patients was -2 (12)%, and all patients showed a reduction which did not exceed 28% of mean fasting volume (fig 2). The only patient suffering from urge-type constipation showed a similar pattern of postprandial tone modification with a -5% volume reduction occurring during the first 30 minute period. Tone modification was evident 17 (11) minutes after meal ingestion.

In IBS-D patients, ingestion of a 200 kcal caloric meal induced a reduction in rectosigmoid tone, demonstrated by an increase in balloon volume. Considering the whole 60 minute postprandial period, mean volume was 152 (65) ml, significantly higher than the fasting value ($p < 0.001$) (fig 1). Mean balloon volume during the first postprandial 30 minute period was 139 (58) ml and mean balloon volume during the second postprandial 30 minute period was 165 (74) ml ($p < 0.01$). In this subgroup of patients, mean per cent postprandial volume modification was $+35$ (21)%, which was significantly different from healthy volunteers ($p < 0.0001$) and IBS-C patients ($p < 0.0001$) (fig 2). Tone modification was evident 19 (10) min after meal ingestion.

There was no significant correlation between stool consistency or frequency of evacuation and per cent modification of postprandial rectosigmoid tone.

Effect of variable caloric intake on rectosigmoid tone

Figure 3 shows fasting and postprandial rectosigmoid volume in IBS and healthy volunteers after 200 and 400 kcal meals. After a 400 kcal meal, it was evident that four of seven (57%) IBS-C patients but no IBS-D patients showed a postprandial reduction in rectosigmoid volume resembling the healthy volunteer response to a 200 kcal meal. In contrast, after 1000 kcal, all IBS patients showed a reduction in rectosigmoid volume greater than 28% compared with fasting volume (IBS-C 41 (15)%, IBS-D 38 (19)%).

Part B

Evaluation of the specificity of rectosigmoid tone response to a meal

Figure 4 shows mean fasting and postprandial rectosigmoid volume in organic and functional patients. In the group of organic diseases, mean MDP was 9 (1) mm Hg and mean fasting balloon volume was 111 (32) ml; in the group of functional constipation patients, mean MDP was 9 (1) mm Hg and mean fasting balloon volume was 126 (41) ml; and in the group of functional diarrhoea patients, mean MDP was 9 (1) mm Hg and mean fasting balloon volume was 103 (34) ml (NS for all comparisons). Organic disease patients responded to the 200 kcal meal with an increase in rectosigmoid tone, resembling the pattern in healthy volunteers (that is, a significant reduction in mean intraballoon volume) (83 (20) ml; $p < 0.01$, considering the mean of the whole postprandial period) (fig 4). Also in this group, the reduction in balloon volume occurred very rapidly (11 (3) min from meal ingestion) and persisted throughout the whole postprandial recording period (mean balloon

Figure 3 Per cent modification of rectal volume after ingestion of 200 and 400 Kcal meal in constipation predominant irritable bowel syndrome (IBS) and diarrhoea predominant IBS patients, and healthy volunteers. The broken horizontal line indicates the cut off of -28% . Horizontal bars represent mean values.

volume during the first postprandial 30 minute period was 82 (36) ml and mean balloon volume during the second postprandial 30 minute period was 68 (15) ml; $p = 0.007$). In patients with organic diseases, mean per cent postprandial reduction was -34 (9)%. In functional diarrhoea and constipation patients, postprandial tone modification was similar to the corresponding IBS subtype. In fact, patients with functional diarrhoea showed a postprandial volume of 120 (41) ml and mean per cent postprandial modification was 14 (15)%. Functional constipation patients showed a postprandial volume of 122 (39) ml and mean per cent postprandial modification was -3 (6)%.

Part C

Evaluation of diagnostic accuracy of the test

Figure 5 shows postprandial rectosigmoid volume modification in our series of 40 prospectively studied patients. It is evident that none of the patients with IBS showed a modification of rectosigmoid volume greater than 28% of the fasting value. In contrast, all organic disease patients but one showed a volume modification greater than 28% of the fasting value, with only one patient showing a reduction of 28%.

DISCUSSION

IBS is a condition involving the whole intestine³² and one of the pivotal symptoms of IBS is modification of bowel habits. Our results show that patients with IBS present a different rectosigmoid response to a meal: in IBS-C, a minor or even no modification of tone was evident while IBS-D patients showed a reduction in tone, with dilation of the rectum. Therefore, both subgroups show an altered gastrorectal reflex.

These findings do not agree with previous studies^{16 19–28} showing a postprandial increase in tone in IBS patients. Important protocol differences, in particular a different recording site and different caloric load, may explain the discrepancy. To avoid interference of anorectal reflexes and adaptive rectal relaxation,^{23 24} we positioned the balloon at the rectosigmoid level, a site where no adaptive relaxation has been described.²⁰ Secondly, the caloric load in our protocol was lower than in previous studies^{16 19 21 22 24 27 28} as a caloric load of 600 or 1000 Kcal may represent too high a stimulus to level out the differences. In final analysis, adoption of a 200 kcal meal represented the best approach.

In IBS patients an exaggerated sensory component of the gastrocolonic reflex was recently shown,²⁵ as suggested by a

Figure 5 Per cent modification of rectal volume after ingestion of a 200 kcal meal in a prospective series of patients with organic disease and in those with functional irritable bowel syndrome (IBS). The broken horizontal line indicates the cut off of -28% . Horizontal bars represent mean values.

marked reduction in colonic perception thresholds and alteration of the viscerosomatic referral pattern after intestinal lipid infusion. These data are not in conflict with ours. IBS patients may have alteration of the thresholds causing alteration of the sensitive branch of the gastrointestinal reflexes, but once triggered with sufficient stimuli, these reflexes may be characterised by an exaggerated sensory component, thus explaining symptom onset.

To evaluate the specificity of the test, we studied a cohort of organic disease patients. Postprandial modification of rectosigmoid tone in these patients is similar to healthy volunteers. Functional diarrhoea and constipation patients showed a tone response resembling the corresponding IBS subtype: tone modification after a low caloric meal may therefore separate patients with functional diseases from those with organic diseases and healthy subjects.

By analysing the results obtained in these patients, we chose the reduction in rectosigmoid volume $\geq 29\%$ mean fasting values as the best cut off for separation of functional and organic disease patients, and to evaluate the accuracy of this cut off we applied it in a prospective series of 40 patients with gastrointestinal disorder. Only one organic disease patient was characterised by a postprandial rectosigmoid volume reduction of 28%, thus falling within the range of functional disease patients. Accordingly, diagnostic accuracy seems promising to support this test in the positive diagnosis of functional disorders.

We believe that the different pattern of postprandial rectosigmoid tone modification in IBS-C and IBS-D patients does not make it possible to explain the pathophysiology of symptoms: we do not yet know whether alteration of the gastrorectal reflex represents a causative mechanism for symptom onset or just a secondary or even a coexisting alteration. Our results indicate that a low caloric meal reveals this altered reflex but in everyday life IBS patients eat meals containing higher amounts of both calories and lipids which, on the other, lead to a normal response. It is therefore difficult to believe that this alteration is involved in symptom onset.

In organic disorders an altered rectosigmoid response to meals is not present, thus suggesting that abnormalities of neural pathways are not present in organic diseases. These findings agree with the results of a recent paper dealing with visceral perception in functional and organic dyspeptic patients.³³ It can be hypothesised that each subgroup of IBS

Figure 4 Per cent modification of rectal volume in organic, functional constipation, and functional diarrhoea patients after ingestion of a 200 kcal meal. The broken horizontal line indicates the cut off of -28% . Horizontal bars represent mean values.

is characterised by a typical pattern of rectosigmoid response to a meal and its detection with the barostat device may thus theoretically represent the pathophysiological basis of a simple test for the positive diagnosis of IBS.

The rectal distension test has recently been proposed as a simple reliable test to confirm the presence of IBS and to distinguish between IBS and other causes of abdominal pain.¹⁴ Several technical concerns have also been raised.¹⁵ It was demonstrated that phasic, rapid but not slow, ramp distensions allow for detection of visceral sensitivity alterations in IBS patients³⁴; the type of increment used to raise the distending pressure may also influence the results of the distension test.³⁵ But the most important concern is the response bias and, among the several protocols proposed to overcome this, repeated distensions around the sensory thresholds in order to avoid stimulus prediction by the patients, seemed the best one.²⁹ Moreover, hypersensitivity to rectal distension, considered as a biological marker of IBS,³⁶ was not detected in any of the patients.¹⁴⁻²⁷ We therefore agree that the diagnostic value of the rectal distension test is questionable in clinical practice.

In contrast, all of the previous criticisms do not apply to evaluation of rectal response to meals, as none of the previously cited putative interferences had any effect during the test.

In conclusion, our results show that defective neuro-modulation of the gastrorectal reflex is present in IBS patients with a different response pattern in IBS-C and IBS-D. Our results, if confirmed in a larger series of patients, may represent the basis for a new diagnostic test.

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