Defecation disorders and chronic abdominal pain in children. Pathophysiology and treatment
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Chapter 7

Alterations

in rectal sensitivity and motility

in childhood

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1. Abstract

1.1 Background and aims

Children with chronic abdominal pain have a heterogeneous clinical presentation, but no organic cause can be identified in most of them. Some children present with symptoms of irritable bowel syndrome. We hypothesized that visceral hypersensitivity and motor abnormalities may be underlying mechanisms in these children.

1.2 Methods

Rectal sensation and rectal contractile response to a meal were studied in 8 children with irritable bowel syndrome and 8 children with functional abdominal pain and were compared with those of 9 healthy volunteers.

1.3 Results

The threshold for pain, but not that for first sensation and urge to defecate, was significantly decreased in patients with irritable bowel syndrome (6 ± 1 mm Hg) compared with patients with functional abdominal pain and healthy volunteers (17 ± 1 and 22 ± 2 mm Hg, respectively). In healthy volunteers and patients with functional abdominal pain, ingestion of a meal induced a decrease in rectal volume with an early and late component. This motor pattern was absent in children with irritable bowel syndrome. In patients with irritable bowel syndrome, no rapid volume waves were observed during fasting in contrast to patients with functional abdominal pain (2.7 ± 0.3 / 10 min) and HVs (1.8 ± 0.5 / 10 min).

1.4 Conclusions

Children fulfilling the Rome II criteria for irritable bowel syndrome have a significantly lowered threshold for pain and a disturbed contractile response to a meal. Comparable to results reported in adults, sensory and motor abnormalities might play a pathophysiologic role in childhood irritable bowel syndrome.
2. Introduction

Approximately 15% of school-aged children experience recurrent episodes of abdominal pain\(^\text{1,4}\). Although these complaints often result in disturbance of daily activities, an organic cause can only be identified in 5 – 10% of the children (e.g. Crohn’s disease, duodenal ulcer, pancreatitis, gastroesophageal reflux)\(^\text{1,3,6}\). In case no organic abnormalities are demonstrated, a functional gastrointestinal disorder is diagnosed in these children. Recently, consensus criteria (Rome II)\(^\text{7}\) were developed dealing with childhood functional gastrointestinal disorders, including irritable bowel syndrome (IBS), consisting of the following symptoms lasting at least 12 weeks, which need not be consecutive, in the preceding 12 months: (1) abdominal discomfort or pain that has 2 of 3 features - relieved with defecation, and/or onset associated with a change in frequency of stool and/or onset associated with a change in form of stool - and (2) no structural or metabolic abnormalities and functional abdominal pain (FAP) consisting of the following symptoms lasting at least 12 weeks: (1) continuous or nearly continuous abdominal pain in a school-aged child or adolescent; (2) no or only occasional relation of pain with physiologic events; (3) some loss of daily functioning; (4) the pain is not feigned; and (5) the patient has insufficient criteria for other functional gastrointestinal disorders. Presently, the pathophysiology underlying IBS and FAP remains unclear.

In adults, a decreased threshold for distention (visceral hypersensitivity) is increasingly believed to be an important mechanism underlying functional bowel disorders\(^8\). For example, lowered thresholds for pain during intraluminal distention of the esophagus or stomach have been reported in patients with noncardiac chest pain and functional dyspepsia, respectively\(^9,10\). Similarly, increased pain sensitivity has been reported in patients with IBS\(^11\) during distention of the colon or rectosigmoid\(^12,18\). Different pathophysiologic mechanisms have been proposed, including hypersensitive lumbar splanchnic afferents\(^11\) or altered central perception demonstrated by aberrant regional cerebral activation\(^19\). It should be emphasized, however, that visceral hypersensitivity may also result from a perceptual response bias in patients with IBS\(^20\).

In addition to visceral hypersensitivity, altered meal-induced rectocolonic motility has been reported in IBS patients. In healthy volunteers (HVs), increased colonic motility after a meal results from neural and humoral mechanisms\(^21\). These mechanisms may be responsible for the acute decrease in colonic volume at the start of the meal and a late phase occurring between 10 and 40 minutes, respectively. An altered gastrocolic response, e.g., a delayed but prolonged response, has been reported in adults with IBS\(^22,26\), possibly contributing to the postprandial aggravation of abdominal pain.

To date, no data on visceral sensitivity to distention and rectal contractile response to a meal measured by barostat are available in children. We hypothesized that, comparable to adults, changes in visceral sensation and motility might play a pathophysiologic role in childhood IBS. Therefore, this study was designed to study whether (1) visceral hypersensitivity is an important underlying mechanism in children with IBS in contrast to children with FAP and (2) the contractile response to a meal is disturbed in children with IBS vs. children with FAP and HVs.
3. Materials and methods

3.1 Subjects

Children needed to be at least 5 years of age to understand the barostat procedure and instructions. Patients with causes of abdominal pain in childhood such as infectious diarrhea, urological infections, lactose intolerance, parasite infections, Helicobacter pylori infection, migraine combined with aura, rectal blood loss, constipation, and encopresis were excluded. Furthermore, patients with evidence of neurological or psychiatric diseases and patients using drugs influencing gastrointestinal motility were excluded. At the first visit to the pediatric motility laboratory, a detailed medical history was obtained, including frequency, duration, type, degree, and localization of the abdominal pain, frequency of defecation, and consistency and size of stool. A physical examination was performed, including rectal examination. Urinary infection was excluded in all patients.

3.1.1 Normal subjects

Nine HVs (3 girls and 6 boys; mean age, 10.2 years; range, 7 – 15 years) without evidence of acute or chronic illness were recruited from siblings of patients visiting the outpatient clinics of the pediatric motility laboratory. In particular, there was no evidence of acute or chronic pain syndrome or abdominal symptoms in any of the subjects.

3.1.2 Patients with IBS/FAP

Sixteen patients with chronic abdominal pain were referred by general practitioners and pediatricians to the pediatric motility unit of the Academic Medical Center. Eight patients (4 girls and 4 boys; mean age, 11.5 years; range 6-17 years) fulfilled the Rome II criteria for childhood IBS. The other 8 patients (6 girls and 2 boys; mean age, 10.3 years; range, 9-13 years) had no symptoms of IBS but fulfilled the Rome II criteria for FAP.

4. Procedure and equipment

4.1 Equipment

A computer-driven barostat device (Synectics Visceral Stimulator; Synectics, Alphen aan den Rijn, The Netherlands) was used for controlled inflation of the rectal balloon.

The procedure was performed with a 10-cm-long noncompliant (polyethylene) balloon with a maximum capacity of 375 mL. The balloon was fixed on a silicone catheter with an outside diameter of 4 mm and an inside diameter of 3 mm, permitting a flow of air of 38 mL/sec. Before and after each study, the balloon was checked for leakage.
4.2 Experimental protocol

Pain medication and all medications known to affect the gastrointestinal motility were discontinued 48 hours before the procedure. The procedure was performed without bowel preparation after a fasting period of at least 5 hours. If on physical examination feces were present in the rectum, the subjects were asked to defecate. Emptiness of the rectum was checked once more by physical examination. Subjects were placed in the left lateral position. The lubricated balloon was placed without the use of endoscopy. One week before the study, the child was intensively informed about the barostat procedure and the equipment was shown.

The balloon was unfolded by a stepwise (30-mL steps) increase of the balloon until a maximum volume of 150 mL. When the balloon was still inflated, the catheter was pulled back against the pelvic floor. After deflation of the balloon and a 15-minute period of equilibration, the minimal distention pressure (MDP) was determined by stepwise increasing the intraballoon pressure (1-mm Hg steps for 1 minute). MDP was defined as the pressure resulting in an intraballoon volume of at least 30 mL and at which the influence of breathing on the volume was visible. Rectal sensation to distention was evaluated using an intermittent distention procedure with steps of 3 mm Hg lasting 1 minute. At every pressure step, the child was asked to score sensation immediately and after 30 seconds. A scale from 0 to 5 was used as follows: 0, nothing; 1, first sensation; 2, urge to defecate; 3, moderate urge to defecate; 4, severe urge to defecate; and 5, pain. In case of pain (5) the balloon was deflated immediately.

After 15 minutes of adaptation, the procedure was continued to determine the contractile response to a meal. Rectal volume was determined using the constant pressure mode at a pressure of MDP + 2 mm Hg. After equilibration, a meal (pancake, 500 kcal; 3.8% fat; 28.9% carbohydrate, and 7.3% protein) was ingested within 5 minutes. Rectal volume was determined during the following 30 minutes, while the child was instructed not to move.

The study protocol was approved by the medical ethical committee of the Academic Medical Center. All subjects and/or parents gave informed consent.

5. Analysis

The compliance was calculated using a nonlinear mixed-effect model for fitting the pressure volume curves of each individual (27,28). The pressure volume curves were constructed by expressing the mean volume of the last 15 seconds (when equilibration of the volume was reached) of the consecutive pressure steps. Thresholds for first sensation, urge to defecate and pain were determined from the intermittent distention protocol and expressed as pressure above MDP.

The contractile response following the meal was described by 2 general patterns (29): (1) rapid volume waves (Figure 1A), defined as a decrease in volume of at least 15 mL, lasting longer than one respiratory cycle (Figure 1B) but less than 2 minutes; and (2) slow volume changes, defined as long-lasting volume changes (>2 minutes).
(A) Rapid volume waves in an HV; (B) Volume changes caused by respiration; and (C) Artifacts identified by an acute, high-amplitude volume wave accompanied by a short and rapid increase in rectal pressure (arrows).

An artifact (Figure 1C) was defined as (1) any change in rectal volume caused by coughing, laughing, talking, or change in body position; (2) a very rapid increase (>10 mm Hg) in rectal pressure; or (3) a duration of change in volume less than 6 seconds. Rectal volume was measured as the mean of 3-minute intervals and expressed as a percentage of the preprandial volume in order to eliminate the interindividual differences in rectal volume before starting the meal.

5.1 Statistical analysis

Data are expressed as mean (± SEM). The analysis of variance design (1-way ANOVA; SPSS, Cary, NC) was used for the sensation thresholds. The restricted maximum likelihood method (S-plus) was used to compare compliance among the different groups. The $\chi^2$ test was used to compare visceral sensitivity and occurrence of the rectal response to a meal in the different groups. Differences were considered statistical significant with P values of < 0.05.
6. Results

6.1 Patient characteristics

Nine HVs (6 boys and 3 girls; mean age, 10.2 years; range, 7 – 15 years) were compared with 16 patients: 8 patients with IBS (4 boys and 4 girls; mean age, 11.5 years; range, 6 – 17 years; 4 constipation predominant and 4 diarrhea predominant) and 8 patients with FAP (2 boys and 6 girls; mean age, 10.3 years; range, 9 – 13 years). There was no difference in age among the different groups ($p = 0.56$). No differences in clinical characteristics between the FAP and IBS group were found, except for the absence of IBS criteria in the FAP group.

6.1.1 Visceral sensation to distention

No differences were found in MDP, volume at MDP, first sensation, and sensation of urge among the 3 study groups (Table 1).

Table 1. Rectal sensation and compliance

<table>
<thead>
<tr>
<th></th>
<th>HVs (N = 9)</th>
<th>IBS (N = 8)</th>
<th>FAP (N = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDP (mm Hg)</td>
<td>4.7 ± 0.4</td>
<td>5.0 ± 0.8</td>
<td>5.1 ± 0.6</td>
</tr>
<tr>
<td>Volume at MDP (ml)</td>
<td>31 ± 4</td>
<td>27 ± 6</td>
<td>42 ± 9</td>
</tr>
<tr>
<td>First sensation (mm Hg)</td>
<td>3.3 ± 0.3</td>
<td>2.0 ± 0.7</td>
<td>1.5 ± 0.8</td>
</tr>
<tr>
<td>Urge (mm Hg)</td>
<td>7.3 ± 1.8</td>
<td>3.9 ± 0.9</td>
<td>8.0 ± 2.5</td>
</tr>
<tr>
<td>Pain (mm Hg)</td>
<td>21.8 ± 2.3</td>
<td>6.0 ± 0.8a</td>
<td>16.7 ± 1.0</td>
</tr>
<tr>
<td>Compliance (mL/mm Hg)</td>
<td>8.4 ± 0.7</td>
<td>6.0 ± 1.0b</td>
<td>7.2 ± 1.0</td>
</tr>
</tbody>
</table>

Data are given as mean ± SEM.

* $p < 0.01$, 1-way ANOVA; IBS patients vs. HVs and patients with FAP

* $p < 0.01$, restricted maximum likelihood method; IBS patients vs. HVs.

6.1.2 Threshold for pain

One volunteer and 2 patients with FAP did not reach the threshold for pain. The threshold for pain was significantly lower in the IBS group (6 ± 1 mm Hg) than the FAP group (17 ± 1 mm Hg) ($P = 0.001$) and HVs (22 ± 2 mm Hg) ($P = 0.0001$). The normal lower range of the threshold for pain was determined by distracting 2xSD from the mean threshold for pain and equaled 9 mm Hg. Using this criterion, all 8 IBS patients, but none of the HVs or FAP patients, had a threshold for pain below the normal lower range of 9 mm Hg (Figure 2).
Cumulative percentage of patients with FAP, those with IBS, and HVs reaching the threshold for pain (p < 0.001, Kaplan-Meier, log-rank test; IBS vs. the other groups).

6.1.3 Rectal compliance

The compliance of the IBS group (6 ± 1 mL/mm Hg) (Table 1) was significantly lower compared with HVs (8 ± 1 mL/mm Hg) (P < 0.05) but not compared with the FAP group (7 ± 1 mL/mm Hg). No difference in compliance was found between the FAP group and HVs.

6.2 Rectal contractile response to a meal

6.2.1 Slow volume changes

6.2.1.1 Healthy volunteers

After equilibration at MDP + 2 mm Hg, the mean rectal volume was 90 ± 8 mL in the 9 HVs. The contractile response to feeding in HVs showed 2 patterns with the first 6 minutes representing an early-onset phase [22] followed by a late-onset and long-lasting phase.
**Early phase**

In the first 6 minutes after meal intake, the rectal volume decreased significantly from 88 ± 8 mL before the meal to 66 ± 7 mL (25 ± 3%) ($P < 0.05$) in 8 of the 9 HVs. Two subjects had only an early, but no late phase (Figure 3).

**Figure 3**

(A) Isolated early phase of increase in rectal tone in response to a meal in an HV; (B) Biphasic increase in rectal tone in response to a meal in an HV (arrow shows onset of late phase); and (C) Absence of any increase in rectal tone in a patient with IBS.

**Late phase**

The morphology varied widely in the late phase of the contractile response (Figure 3B). Six of 9 HVs had a contractile response with an evident late phase. In the subjects with a late phase, the rectal contraction started 9 (range, 6 – 11) minutes after starting ingestion of the meal and lasted until the end of the study. The rectal volume in these patients diminished from 95 ± 8 to 37 ± 10 mL. The mean percentage decrease in rectal volume after the first 6 minutes was 63% ± 21%. The normal lower range of percentage decrease in rectal volume in response to a meal was determined by distracting 2xSD from the mean and equaled 20%. Therefore, the late phase of the contractile response was defined as a decrease in rectal volume ≥20% of the basal volume.
From the 3 HVs in whom no late change in rectal volume was recorded (Figure 4), 2 showed only an early phase and 1 showed no response at all.

6.2.1.2 Patients with IBS/FAP

After equilibration at MDP + 2 mm Hg, the mean rectal volume in the FAP group and the IBS group was 84 ± 13 and 74 ± 9 mL, respectively. This was not different from that in HVs (90 ± 8 mL).

Figure 4

![Graph showing percentage decrease in rectal volume in HVs, IBS group, and FAP group. A decrease of 20% was considered as a positive rectal contractile response to a meal.]

Early phase

No change in volume during the first 6-minute period was observed in any of the IBS patients (74 ± 9 to 74 ± 12 mL). In the FAP group, the volume changed from 77 ± 17 to 56 ± 16 mL in 4 of the 8 patients.

Late phase

Five of 8 FAP patients but none of the IBS patients (Figure 3C) had a late contractile response compared to 6 of 9 of the HVs (p = 0.01, χ²; HVs and FAP vs. IBS) (Figure 4). The morphology of the late phase had, as in HVs, wide variation. In the subjects from the FAP group
with a late phase, the time of onset was not different (8 (range, 3 – 16) minutes) compared to with HVs (9 (range, 6 – 11) minutes) and also lasted until the end of the study. The rectal volume decreased in this group from 78 ± 14 to 40 ± 12 mL and was also not different compared with HVs.

6.2.2 Rapid volume waves

6.2.2.1 Healthy volunteers

During fasting, rapid volume waves were recorded in only 4 HVs (Table 2).

Table 2. Rapid volume waves

<table>
<thead>
<tr>
<th></th>
<th>HVs (N = 9)</th>
<th>IBS (N = 8)</th>
<th>FAP (N = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>subjects with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fastig waves (N)</td>
<td>4</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>frequency (per 100 min)</td>
<td>1.8 ± 0.5</td>
<td>2.8 ± 2.1</td>
<td>2.7 ± 3.2</td>
</tr>
<tr>
<td>amplitude (mL)</td>
<td>18 – 37</td>
<td>15 – 84</td>
<td>16 – 31</td>
</tr>
<tr>
<td>duration (s)</td>
<td>21 ± 6</td>
<td>19 ± 1</td>
<td>23 ± 4</td>
</tr>
<tr>
<td>Data are given as mean ± SEM or as range (amplitude).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After the meal, rapid volume waves were recorded in 8 subjects with comparable frequency, amplitude, and duration.

6.2.2.2 Patients with IBS/FAP

During fasting, no rapid volume waves were recorded in the IBS patients. After the meal (Table 2), rapid volume waves were present in only 3 IBS patients. In one of these subjects, 7 rapid volume waves per 10 min occurred. During the fasting period, 3 FAP patients showed rapid volume waves (Table 2), increasing to 6 subjects after the meal. The preprandial and postprandial rapid volume waves had comparable characteristics. One patient from the IBS group and 2 patients from the FAP group showed rapid volume waves with a reduction in rectal volume of more than 50 mL. This IBS patient and 1 of the FAP patients experienced abdominal pain during these contractions. However, the other FAP patient, who also showed a reduction in rectal volume of more than 50 mL, did not experience pain.
7. Discussion

This study describes for the first time that children fulfilling Rome II criteria for IBS have a significantly lowered threshold for pain and lack a contractile response after a meal in contrast to children with FAP. These results suggest that visceral hypersensitivity and motor abnormalities are underlying mechanisms in children with IBS, but not in children with FAP.

Recent large prospective studies \(^{(19,31)}\) showed a large heterogeneity in clinical presentation in children with symptoms of chronic abdominal pain. Diagnostic investigations in these children show an organic cause in only 5 – 10% with, e.g. duodenal pathology, gastroesophageal reflux, and Helicobacter pylori infection as underlying diseases. However, no organic cause can be identified in most of these children, indicating that they have a functional gastrointestinal disorder. According to the latest Rome criteria, abdominal pain of functional origin can be subdivided in functional dyspepsia, IBS, FAP, abdominal migraine and aerophagia \(^{(3)}\). In the present study, we investigated whether, similar to adults, visceral sensitivity to distention and contractile activity to meal ingestion differ in 2 subgroups of children with chronic abdominal pain: children with IBS and those with FAP. Interestingly, only children with IBS symptoms reported pain at thresholds significantly lower than controls, whereas perception of nonpainful stimuli was unaltered. In contrast, all FAP children had a normal threshold for rectal pain, suggesting that rectal hyperalgesia may discriminate FAP from IBS children. This difference in rectal sensitivity cannot be explained by the lowered compliance measured in the IBS children. If rectal sensitivity is rather determined by wall tension than by pressure, as suggested in the stomach \(^{(32)}\), changes in compliance can indeed influence the threshold for pain. However, a decrease in compliance will result in a lower wall tension at the rectal pressure corresponding with the threshold for pain. Therefore, the difference in rectal sensitivity among IBS children and the other 2 groups would be even more pronounced when expressed as tension. In adults, only half of the IBS patients have a lowered threshold for pain \(^{(20)}\), whereas in the current study all children with IBS had a lowered threshold for pain. This difference might be a result of the relatively small number of patients in our study, a more purely defined patient population, or different additional pathophysiological mechanisms involved in adulthood IBS.

It is becoming increasingly clear that perception of pain is altered in patients with IBS; pain resulting from distention of the rectum, sigmoid, or colon is perceived earlier than in healthy controls. Although the mechanism of this visceral hypersensitivity is still under debate, it is generally accepted to be an important pathophysiological mechanism of functional bowel disease, including IBS. However, a recent review on visceral hypersensitivity in adults \(^{(26)}\) suggested that a perceptual response bias, which might be induced by early childhood learning, may be an explanation of the observed differences in threshold for pain between IBS and healthy controls. In accordance, Apley observed \(^{(33)}\) that a majority of children with chronic abdominal pain had a positive family history for abdominal pain. To what extent psychological or social factors or a perceptual response bias due to early childhood learning contribute to visceral hypersensitivity is unclear and cannot be determinated from our study. The youngest child in our study was 6 years old, because we only studied children older than 5 years. Therefore, we cannot exclude that visceral hypersensitivity also occurs at a younger age. However, it is interesting to evaluate prospectively whether these children will continue to have IBS symptoms and visceral
hypersensitivity in their adulthood and whether pharmacologic or psychological intervention may alter this course.

Not only visceral hypersensitivity to distention but also changes in motility, especially after ingestion of a meal, have been reported as underlying pathophysiologic mechanism in adult patients with IBS. The contractile response to food ingestion is not clearly understood; in children, this response is only measured by colonic manometry \(^{(34,35)}\), while barostat data evaluating rectal tone in children are lacking. Many factors, such as the size and the (caloric) content of the meal, total duration of the study, preparation of the colon, and the different parameters for colonic activity (e.g., spike activity, motility index, colonic tone, mean or maximal decrease in barostat volume) studied, make comparison difficult. Comparable to a previous barostat study in adults\(^{(29)}\), we identified rapid volume waves and slow or tonic changes in rectal volume. In healthy adults, ingestion of a meal results in an acute increase in tone of the colon descendens\(^{(26)}\) and rectum\(^{(29)}\), starting after 5 – 10 minutes \(^{(7,36)}\) and lasting at least 110 minutes. Careful analysis of our postprandial recordings showed comparable results: an initial slight decrease in rectal volume in most children followed by a more pronounced decrease starting 9 minutes after the meal and lasting at least 30 minutes. One might speculate that the initial phase results from a neural mechanism\(^{(22)}\). This increase in tone did not occur when the children saw or smelled the meal, but started with the first bite. Two healthy subjects only had an early but no late phase, providing indirect evidence that these 2 phases may have different underlying mechanisms. Interestingly, none of the IBS children had an increase in rectal tone after the meal. In contrast to what might be anticipated, the meal-induced contractile response was not only absent in children with constipation-predominant, but also in those with diarrhea-predominant IBS, suggesting that it is unlikely that the contractile response to a meal is involved in changes in defecation pattern in IBS children. However, we only recorded during 30 minutes after the meal.

In adult patients with IBS, contractile activity is also reduced during the first 30 minutes \(^{(26,39)}\) compared with healthy controls \(^{(26)}\) but increases between 40 and 80 minutes after the meal, when the motility index in healthy controls has returned to fasting level \(^{(26)}\). Similar to our study, a barostat study in the colon descendens in adult IBS patients showed also no decrease \(^{(23)}\) in volume in response to a 1000-kcal meal \(^{(18)}\). Because we were unable to record longer than 30 minutes postprandially for ethical reasons, we cannot exclude the possibility that children with IBS have a contractile response that, however, is delayed in onset. To what extent the absence of the increase in rectal tone results from extrinsic denervation cannot be determined from our study.

In addition to changes in rectal tone, we also observed rapid volume waves during fasting and in the postprandial period. The frequency, amplitude, and duration of these volume waves were comparable to those reported in healthy adults \(^{(29)}\). Interestingly, whereas no differences were observed between FAP children and healthy subjects, children with IBS showed no rapid volume waves during fasting, but only a few children had this contractile activity after the meal. These findings further suggest that changes in contractile activity may be involved in the pathogenesis of IBS. This is to some extent further corroborated by the observation that pronounced volume waves in one IBS patient was accompanied by crampy abdominal pain after meal ingestion.
Clearly, the development and perception of symptoms is very complex and probably different in children and adults (stress factors, hormonal influences, etc.). Chronic abdominal pain is a troublesome symptom to both children and their parents, resulting in frequent use of health care sources (4). Explanation of the underlying pathophysiologic mechanism in children with IBS may help them to understand the cause of their abdominal pain. This information will reassure the patients and their parents and may diminish the demand for further medical investigation. In addition, reassurance might be important to prevent possible secondary psychological problems, which may contribute to persistence of symptoms into adulthood. Finally, because the diagnosis of IBS is made upon fulfilling symptom-based criteria, ideally, these criteria then should correspond with specific underlying pathophysiologic mechanisms. Our finding that all children with IBS have visceral hypersensitivity and lack a contractile response to a meal clearly illustrates that this is certainly the case in children with IBS.

In summary, we show that a subgroup of children with chronic abdominal pain - patients fulfilling the Rome II criteria for IBS - had a significantly lower threshold for pain and an altered contractile response to a meal. These findings suggest that, similar to adult patients with IBS, visceral hypersensitivity and motor abnormalities are underlying pathophysiologic mechanisms.
Reference List


114


