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Is There a Difference Between Abdominal Pain and Discomfort in Moderate to Severe IBS Patients?

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OBJECTIVES: The aims of this study were to: 1) determine the relative prevalence of self-reported pain-predominant and discomfort-predominant symptom patterns in irritable bowel syndrome (IBS) patients; and 2) test the hypotheses that pain-predominant patients report higher GI symptom severity, show higher psychological symptom severity, show worse quality of life, and demonstrate higher health care use.

METHODS: A total of 256 consecutive ROME I-positive IBS patients with moderate to severe symptoms were classified according to whether they rated their predominant IBS symptoms as pain (n = 52), or as nonpainful discomfort (n = 128) on the Irritable Bowel Syndrome Quality of Life questionnaire. The validity of this classification scheme was confirmed by interview in a subsample of 45 patients. IBS-specific symptom patterns, psychometric assessment, and health-related quality of life measures were obtained using validated survey instruments.

RESULTS: Contrary to the generally accepted notion that pain is the most predominant symptom in IBS, twice as many patients self-classified their symptoms as abdominal discomfort rather than abdominal pain. The classifications based on questionnaire data were shown to be valid in a subsample of subjects (n = 45) who underwent classification based on an independent, blinded, clinical interview ($r = 0.77$, $p < 0.05$). Pain and discomfort subgroups were similar in age, gender, predominant bowel habit, and overall GI symptom severity. In addition, the subgroups reported similar degrees of psychological distress, impaired quality of life, and increased patterns of health care use.

CONCLUSIONS: Subgroups of moderate to severe IBS patients do report their predominant GI symptoms in terms of pain or nonpainful discomfort, regardless of severity of their overall GI symptoms or psychological symptoms. These findings are most consistent with a cognitive labeling bias of visceral sensations as either pain or discomfort. (Am J Gastroenterol 2002;97:3131–3138. © 2002 by Am. Coll. of Gastroenterology)

INTRODUCTION

Although abdominal pain has always been regarded as one of the essential symptoms of irritable bowel syndrome (IBS), currently used diagnostic criteria do not differentiate between pain and discomfort. Although pain is a specific sensation, the subjective report of discomfort in patients with IBS can reflect a wide range of symptoms, including discomfort during bowel movements, sensations of bloating, fullness, incomplete evacuation, and urgency. Even though there is good evidence to support a correlation between aversive abdominal symptoms (including both pain and discomfort) with worse overall GI symptom severity (1), higher psychiatric comorbidity (2), and more frequent physician visits (3, 4), the relative contribution of nonpainful symptoms (such as bloating, fullness, incomplete rectal evacuation) to this increased morbidity has not been evaluated.

IBS patients who rate abdominal pain as their most bothersome symptom (compared with those rating nonpainful discomfort as most bothersome) were found to be more likely to develop rectosigmoid hyperalgesia after repetitive noxious sigmoid balloon distension (5). Even though there are many possible explanations for these findings, they suggest that there may be involvement of different pathophysiological mechanisms in patients with and without abdominal pain. For example, abdominal discomfort and pain: 1) could be mediated by completely separate mechanisms (*e.g.*, the former by a motility alteration, the latter by a perceptual alteration), one or both of which are altered in IBS; 2) are mediated by different peripheral afferent mechanisms (such as vagal and spinal pathways), but amplified by the same central abnormality (for example, hypervigilance); 3) are on the same continuum with pain appearing at the more severe end of the spectrum; and 4) are related to cognitive factors such as preferential labeling of aversive sensations as pain.

To our knowledge, there have not been any previously published studies assessing possible clinical differences between discomfort-predominant and pain-predominant IBS patients using a validated question format for separating

patients and examining the variables. In the current study, we sought to determine possible differences between the pain-predominant and discomfort-predominant IBS patients in terms of predominant bowel habit, prevalence of different viscerosensory symptoms, disease severity ratings, psychological symptom severity rating, quality of life (QOL) score measures, as well as health care seeking behavior. Based on published concepts in the literature (6–10), we hypothesize *a priori* that pain-predominant patients have: 1) greater severity of IBS symptoms; 2) longer duration of symptoms; 3) higher psychological disturbances; 4) more impaired QOL; and 5) greater health care use.

MATERIALS AND METHODS

Study Subjects

We studied 256 consecutive ROME I-positive IBS patients seen at the University of California, Los Angeles, between January 1998 and May 2001. Approximately half were recruited through advertisement for the clinical trial unit of the CURE Neuroenteric Disease Program, whereas the rest were referred from the Functional Bowel Disorders Clinic. Before their initial assessment, subjects completed validated bowel symptom, psychometric, and QOL questionnaires. The diagnosis of IBS was made by one of the two attending gastroenterologists experienced in evaluating functional bowel disease and by excluding organic disease. The study protocol was devised before establishment of ROME II criteria (11).

Pain Versus *Discomfort Classification*

Patients with Rome I-positive IBS were classified into pain-predominant and nonpain-predominant (*i.e.*, discomfort) subgroups based on their response to a question in the questionnaire with the following text: "Which of the following statements best describes the type of symptoms you experience in the lower abdomen?"

- My symptoms usually (more than 75% of the time) occur in the form of discomfort without clear pain. This discomfort may include sensations of bloating, fullness, gas, incomplete evacuations, or severe urgency.
- My symptoms usually (more than 75% of the time) occur in the form of pain or cramps.
- I commonly have symptoms of pain and discomfort.
- I never experience pain or discomfort in the lower abdomen.

Those selecting the first option were classified as discomfort predominant, whereas those selecting the second option were classified as pain predominant. Validity of the above categorization scheme was assessed in a subsample of patients (n = 45) who were interviewed by a nurse practitioner experienced in functional bowel disease, with the interviewer blind to the subject's questionnaire answers. Patients were then separately asked to rate their abdominal pain severity on a scale of 0 to 20 with 0 defined as no symptoms and 20 defined as most intense pain imaginable. This redundancy was used to ensure appropriate categorization of patients in each group as a form of internal consistency verification.

Symptom Assessment

A previously published bowel symptom questionnaire (12) was used in which patients were asked to report on their general GI symptoms, upper and lower abdominal symptoms, predominant bowel habit, and general medical history. Patients were specifically asked to select the single most bothersome symptom. Questions were also asked regarding age at onset of first symptoms as well as temporal duration of symptom flare and quiescence. Subjects also independently rated the intensity of their overall GI symptom severity, upper and lower abdominal pain severity, as well as upper and lower discomfort severity.

Predominance of bowel habit was determined in two ways: 1) from a question which asked patients to describe their predominant pattern of bowel habit (>75% of the time) as being a) infrequent, hard or lumpy; b) frequent, loose or watery; or c) both patterns about equally often; and 2) retrospectively based on the ROME II guidelines (13). In this latter classification scheme, alternating bowel habits were defined as those who did not fall into either constipation- or diarrhea-predominant categories.

Health care use was ascertained in a question where patients were asked to report on the number of doctor visits in the previous year for any problem. They were then separately asked to answer the same question for GI problems specifically.

Psychological Symptom Assessment

Current psychological symptoms were assessed using the Brief Symptom Inventory (BSI). This instrument is a brief form of the Symptom Checklist (90-R), which is a self-report inventory used in a great variety of settings to assess psychological symptoms (14). The BSI was developed to measure nine primary symptom dimensions: somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. In addition, three global indices of distress (Global Severity Index, Positive Symptom Total, Positive Symptom Distress Index) can be obtained (15). The reliability of the BSI has been tested using internal consistency, test-retest, and alternate forms of reliability, resulting in coefficients ranging from 0.68 to 0.91. All of the subscales on the BSI's parent instrument, the Symptom Checklist 90-R, except the psychoticism scale, had high construct validity (16).

QOL Assessment

Patients completed the 30-item Irritable Bowel Syndrome Quality of Life (IBSQOL) questionnaire. The IBSQOL questionnaire is a disease-specific instrument designed to measure nine domains thought to be relevant to patients with IBS: emotional health, mental health, sleep, energy, physi-

Table 1. Patient Characteristics

	Entire Group (n = 256)	Discomfort-Predominant Group (n = 128)	Pain-Predominant Group (n = 52)	*p*
Age (yr)	47 ± 0.8	47 ± 1.2	47 ± 1.8	
Female gender (%)	67	63	71	
Self-rated symptom severity (%)				
Mild	5	6	5	
Moderate	38	44	27	
Severe	41	37	45	
Very severe	15	13	22	
Symptom onset				
<6 mo	4	5	6	
6–12 mo	6	7	8	ns
1–2 yr	9	10	10	
2–5 yr	22	23	15	
5–10 yr	17	18	13	
10–20 yr	21	17	23	
>20 yr	21	20	25	
Bowel habit*				
IBS (constipation, %)	27 (20)	29 (21)	28 (15)	
IBS (diarrhea, %)	40 (28)	40 (29)	37 (29)	
Alternating (%)	33 (52)	31 (50)	35 (56)	

* Bowel habit percentages determined by questionnaire and ROME criteria.

cal functioning, diet, social role, physical role, and sexual relations. The questionnaire has been shown to be valid (17, 18), reliable (17), and responsive to a change in a clinical trial population (19, 20). The IBSQOL was scored according to the developers' recommendations (17). Each scale score on the IBSQOL was transformed to a scale of 0 to 100, with 100 representing the best possible QOL.

Statistical Analysis

Prevalence of symptoms was expressed in percentages. Comparisons among groups were performed using a χ^2 test for categorical data and a *t* test for continuous data. Statistical significance was assessed at the $p < 0.05$ level. All of the statistical analyses were performed using the SPSS statistical software package (SPSS, Chicago, IL).

RESULTS

A total of 256 ROME-positive IBS patients with complete information were identified, and 128 (50%) self-characterized their IBS symptoms as discomfort predominant, 52 (21%) as pain predominant, and 73 (29%) as equivalent pain and discomfort. To best determine possible differences between the discomfort-predominant and pain-predominant groups, the first two groups were selected and analyzed. The clinical characteristics of these groups are shown in Table 1. The groups were not different with respect to age, gender, symptom severity, time since first onset of symptoms, or predominant bowel habit.

Internal Validity of "Pain Predominance"

We first assessed for construct validity of the instrument to discriminate between pain and discomfort type symptoms. There was good agreement between the clinical judgment of the blinded interviewer and the questionnaire assessment of pain *versus* discomfort predominance ($r = 0.77$, $p < 0.05$). When comparing different questionnaire measures assessing pain and discomfort, we found that the average abdominal pain severity scores were higher both in the lower abdomen (13.1 ± 0.7 *vs* 7.84 ± 0.5) and in the upper abdomen (9.6 ± 0.91 *vs* 5.7 ± 0.51) in the pain-predominant patients ($p < 0.000$).

Viscerosensory Symptom Profile

UPPER ABDOMINAL SYMPTOMS. Up to 75% of IBS patients reported coexisting upper abdominal symptoms of pain or discomfort. The prevalence of these upper abdominal symptoms was significantly higher in the pain-predominant group (76% *vs* 52%, $p = 0.004$). Although the pain-predominant group reported significantly higher prevalence of upper abdominal pain (52% *vs* 7.6%, $p < 0.000$), the discomfort-predominant group reported significantly higher prevalence of upper abdominal discomfort (66% *vs* 18%, $p < 0.000$) (Fig. 1).

SINGLE MOST BOTHERSOME SYMPTOM. When asked for their single most bothersome symptom, the groups were significantly different ($p < 0.000$). The pain-predominant group demonstrated higher prevalence of abdominal pain (38% *vs* 6%), chest symptoms (2% *vs* 0.8%), and nausea (6% *vs* 0%), whereas the discomfort-predominant group reported a higher prevalence of bloating (22% *vs* 4%), sensation of incomplete rectal evacuation (8% *vs* 0%), and visible abdominal distension (5% *vs* 0%) (Fig. 2).

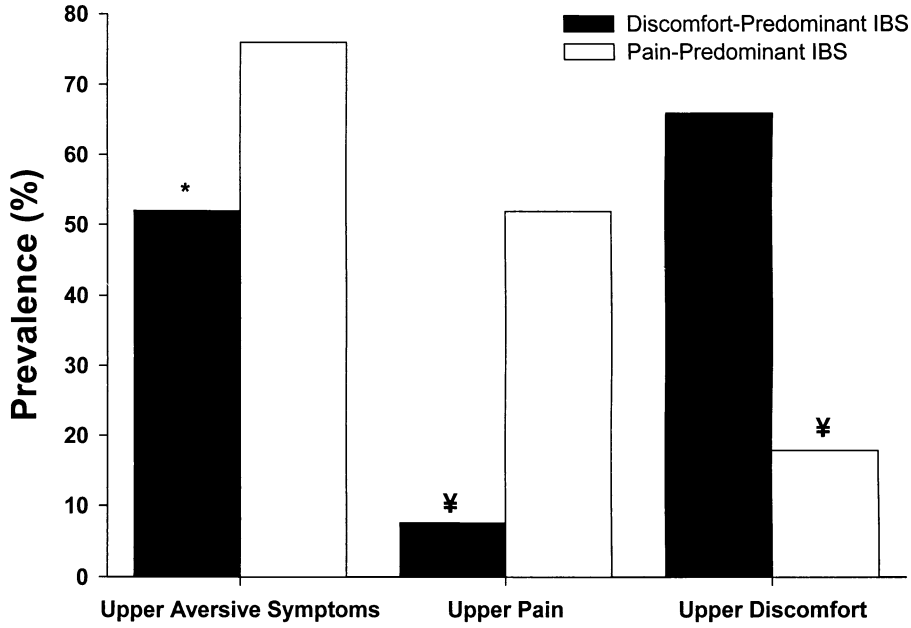

Figure 1. Prevalence of upper abdominal symptoms. The prevalence of coexisting upper symptoms (pain or discomfort) was significantly higher in the pain-predominant group (76% *vs* 52%, $p = 0.004$). Although the pain-predominant group reported significantly higher prevalence of upper abdominal pain (52% *vs* 7.6%, $p < 0.000$), the discomfort-predominant group reported significantly higher prevalence of upper abdominal discomfort (66% *vs* 18%, $p < 0.000$).

Symptom Severity Ratings

IBS SYMPTOMS. In contrast to our hypothesis, there was no significant difference in overall GI severity ratings between the pain- and discomfort-predominant groups (12.9 ± 0.65 *vs* 12.2 ± 0.36). Although the pain-predominant group rated their abdominal pain nearly twice as high as the discomfort-predominant group (13.1 ± 0.68 *vs* 7.8 ± 0.47, $p < 0.000$), there was no significant group difference for the discomfort severity rating (13.1 ± 0.7 *vs* 12.2 ± 0.4), suggesting that overall GI symptom severity ratings are

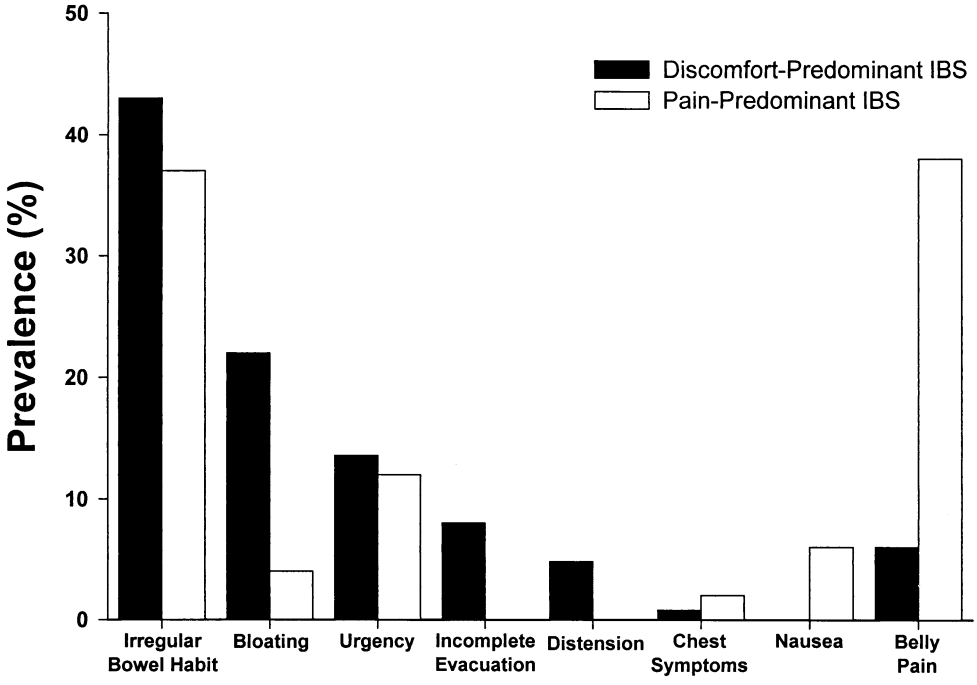

Figure 2. Prevalence of most bothersome symptom reported by the two groups. Patients were asked to select the most bothersome symptom. Although the discomfort-predominant patients reported more irregular bowel habit, bloating, urgency, sensation of incomplete evacuation, and visible distension, the pain-predominant group reported more chest pain, nausea, and abdominal pain ($p < 0.000$).

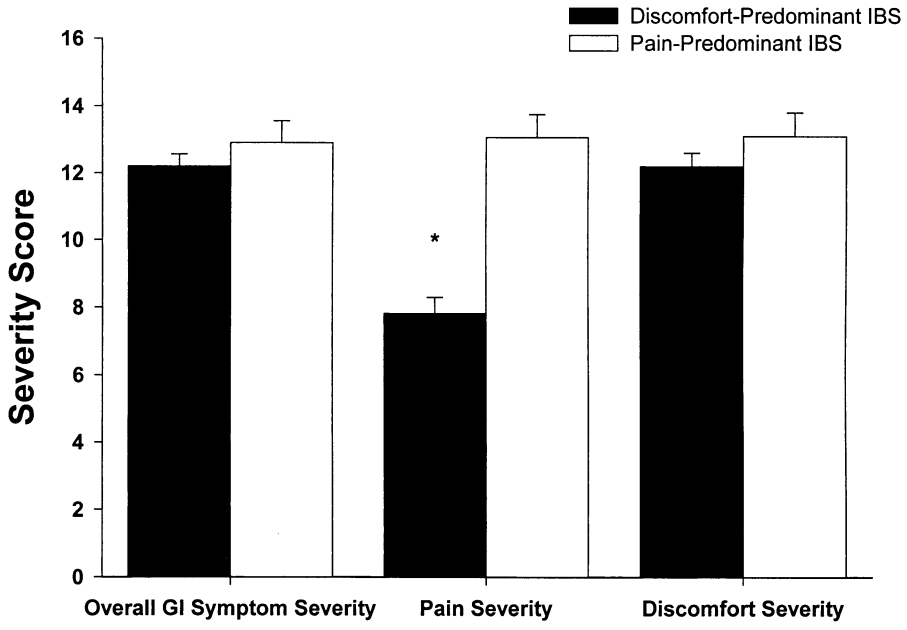

Figure 3. Severity of GI symptom. Although the pain-predominant group rated their abdominal pain nearly twice as high as the discomfort-predominant group (13.1 ± 0.68 *vs* 7.8 ± 0.47, *$p < 0.000$), there was no significant group difference for the discomfort severity rating (13.1 ± 0.7 *vs* 12.2 ± 0.4) or overall GI symptom severity (12.9 ± 0.65 *vs* 12.2 ± 0.36).

based on the most severe category of symptoms, regardless if it is perceived as painful or as nonpainful discomfort (Fig. 3). Consistent with this concept, overall GI symptom severity correlated with both discomfort severity ($r = 0.62$, $p < 0.000$) and pain severity ($r = 0.43$, $p < 0.000$). Descriptive measures of IBS severity denoted as mild, moderate, severe, and very severe correlated with numerical (0 to 20) intensity scores for both abdominal pain ($r = 0.37$, $p = 0.001$) and discomfort ($r = 0.39$, $p = 0.000$) severity.

PSYCHOLOGICAL SYMPTOMS. In contrast to our hypothesis, the pain-predominant group did not report higher psychological symptom severity scores in any of the nine primary symptom dimensions. Furthermore, there were no statistically significant group differences in the Global Severity Index (58.0 ± 1.5 *vs* 57.4 ± 1.1), Positive Symptom Total (57.5 ± 1.56 *vs* 58.0 ± 1.03), or Positive Symptom Distress Index (57.6 ± 1.33 *vs* 55.4 ± 0.86).

QOL Measures

Contrary to our hypothesis, the two groups reported equal impairment in IBS-related QOL. This was true for all nine measured dimensions of QOL: emotional health (54 ± 2.9 *vs* 57 ± 4.7), mental health (75 ± 2.1 *vs* 74 ± 4.0), sleep (75 ± 2.47 *vs* 68 ± 4.6), energy (62 ± 2.69 *vs* 59 ± 4.5), physical functioning (78 ± 2.4 *vs* 69 ± 3.7), diet (68 ± 2.1 *vs* 64 ± 3.3), social role (67 ± 2.6 *vs* 64 ± 4.4), physical role (50 ± 3.0 *vs* 56 ± 4.4), and sexual relations (72 ± 3.5 *vs* 73 ± 4.6).

To determine whether discomfort or pain contributed more to QOL impairment, a stepwise regression analysis was carried out with discomfort and pain severity as predictors of QOL scores. This showed discomfort severity as having the strongest independent relationship with QOL impairment ($r = 0.47$, $p = 0.00$).

Health Care Use

As expected, higher overall GI symptom severity defined by a median split was associated with twice as many physician visits (42% *vs* 25%, $p = 0.023$). However, the groups who reported pain or discomfort as their predominant symptom demonstrated similarly increased frequency of annual physician visits for both general and GI-related symptoms (Table 2).

Table 2. Frequency of Annual Physician Visits in the Discomfort-Predominant and Pain-Predominant Groups

	Entire Group (n = 256)	Discomfort-Predominant Group (n = 128)	Pain-Predominant Group (n = 52)	*p*
Patients reporting any physician visits (%)				
None	9	10	8	
1–2 times	21	27	12	
3–5 times	36	34	40	ns
6–10 times	15	13	16	
>10 times	19	16	24	
Patients reporting GI-related physician visits (%)				
None	30	32	25	
1–2 times	29	33	26	
3–5 times	23	22	27	ns
6–10 times	9	9	10	
>10 times	8	4	12	

DISCUSSION

The current study was aimed at testing the following hypothesis: IBS patients who experience abdominal pain (as opposed to nonpainful discomfort) as their predominant symptom are characterized by greater severity and duration of IBS symptoms, higher psychological disturbances, more impaired QOL, and greater health care use. In a patient sample with self-rated moderate to severe symptom severity, we found that patients can self-classify their abdominal symptoms as either predominantly painful, or as predominantly discomfort-like; this classification is independent of age or predominant bowel habit. The pain-predominant group consistently ranked upper and lower pain severity higher than the discomfort-predominant group despite similar overall GI severity scores. However, the results do not support our hypothesis: There were no group differences for overall GI symptom severity and duration, psychological symptom severity, health-related quality of life (HRQOL), or for health care use.

Viscerosensory Symptom Profile

Contrary to the generally accepted notion that pain is the most predominant symptom in IBS, we found twice as many patients who reported their symptoms as discomfort predominant without clear abdominal pain. This finding is consistent with our previous report in another sample of consulting IBS patients, which demonstrated that bloating type symptoms are perceived as most bothersome by two-thirds of patients compared with abdominal pain (5). Our data showed that although over 70% of discomfort-predominant patients also reported abdominal pain as a typical symptom, only 7% characterized it as the single most bothersome symptom.

Reports of upper abdominal (76%) and retrosternal pain (42%) were highly prevalent in the pain-predominant group, and significantly more frequent than in the discomfort-predominant group (52% and 19%, respectively), suggesting that pain-predominant patients are either more likely to report visceral sensations arising from the upper and lower GI tract as painful, or that a greater and more generalized sensitization of visceral pain pathways exists in this patient group. The fact that the majority (66%) of discomfort-predominant patients reported upper GI discomfort and that both groups rated overall GI symptoms similarly makes the latter explanation unlikely, unless pain is not a crucial symptom in the self-assessment of overall symptom severity. Alternatively, the main determinant for the overall GI symptom severity rating is the subjective distress experienced by the patient, regardless if it is caused by such nonpainful symptoms as bloating, abdominal distension, or a sensation of incomplete rectal evacuation, or by abdominal pain. This latter concept is supported by the findings of the current study.

Symptom Severity Ratings

IBS SYMPTOMS. The observation that both groups had similar overall GI symptom severity underscores the relative importance of nonpainful to painful IBS symptoms as equally deleterious elements of patients' overall sense of well-being. Consistent with the self-classification scheme of the two groups, the pain-predominant patients reliably rated the intensity of their painful symptoms higher than their discomfort-predominant counterparts despite having similar overall GI and psychological symptom severity. This pattern was true for both upper and lower abdominal pain severity ratings. This observation supports the notion that the primary difference between the two groups lies in differential labeling of the same visceral sensation. This may be attributed to various past experiences with similar sensations or may merely reflect the variability in familial or sociocultural elements responsible for the observed differential labeling of similar aversive stimuli.

PSYCHOLOGICAL SYMPTOMS. The comorbidity of IBS with affective disorders has been well described (2, 21–26). It has previously been suggested that patients who report more severe pain are more likely to suffer from such comorbidity (6). In contrast, the current findings demonstrate that despite consistently reporting higher pain severity, the pain-predominant patients had similar impairments in all nine dimensions of psychological distress ratings as the discomfort-predominant counterparts. Together with the observation that discomfort severity correlates with somatization and anxiety scores, we further demonstrate an association of nonpainful symptoms in IBS with psychological distress.

QOL Measures

HRQOL is a concept that incorporates the patient's perceptions, illness experience, and functional status as related to an illness (27, 28). Gralnek *et al.* have recently shown that decrements in HRQOL are most pronounced in energy/fatigue, role limitations caused by physical health problems, bodily pain, and general health perceptions (29). However, the relative contribution of nonpainful symptoms as opposed to painful sensations to this overall impairment had not been previously reported. Our results demonstrate that discomfort-predominant patients have an equally pronounced deficit in sleep, energy, physical function, diet, and sexual function scores compared with their pain-predominant counterparts. Furthermore, using stepwise regression analysis, we demonstrated that discomfort severity has a higher independent association with HRQOL impairment than does pain severity.

Health Care Use

Although only about 25–50% of individuals with IBS symptoms in the United States seek medical care for their symptoms, those who do seek medical attention for their bowel complaints account for millions of annual physician visits and medical prescriptions (30, 31). Visceral pain is the most

common form of pain produced by disease and one of the most frequent reasons for patients to seek medical care (32). To explore why some patients with IBS go to the doctor and others do not, Sandler *et al.* showed that those who consulted physicians for bowel symptoms were more likely to report abdominal pain than those who did not. Despite this observation, presence of pain by itself was not sufficient to explain doctor visits (3). More recently, Heaton *et al.* demonstrated that, of individual aversive symptoms, the most strongly associated with consulting behavior was abdominal pain (33). This is consistent with a survey of a community sample by Talley *et al.*, which further showed that the frequency of pain, rather than the presence of pain, shows the strongest association with physician visits (34). Somewhat contrary to the above findings were the observations made by Lembo *et al.* (5), where in a tertiary care referral center with a population of patients suffering from more frequent pain episodes than Talley *et al.*'s (34) community sample, pain was rated only by a minority of patients as the most disturbing symptom and was therefore unlikely to be the primary reason why these patients sought health care. In the current study, discomfort-predominant patients reported a similar frequency of physician visits as their pain-predominant counterparts. One shortfall in this study was that health care use was only measured in terms of frequency of annual physician visits; therefore, other health care use parameters, such as medication use patterns and nonphysician health visits, were not studied. Furthermore, considering the variable consulting habits of subjects with IBS, presence of ascertainment bias in this study, although unlikely to affect the main conclusions, is acknowledged.

Possible Explanation for Self-Reported Pain Versus *Discomfort Predominance*

There are several possible explanations for the observation that some IBS patients consistently rate their predominant symptoms as "pain" as opposed to "nonpainful discomfort," despite similar overall GI symptom severity ratings.

The most plausible explanation, partially supported by the current observations, is a word selection bias resulting in greater likelihood to label a given uncomfortable sensation as painful. This preferential use of "pain" as a label for ambiguous visceral sensations is not related to severity of symptoms and could be attributed to a higher threat level, prior experience with other pain problems, or modeling of reporting of abdominal symptoms based on other family members. This word selection bias hypothesis is supported by the fact that overall GI symptom severity, psychological symptom severity, QOL impairment, as well as health care use were not different between pain and discomfort groups, and that pain-predominant patients also rated upper GI and chest symptoms more frequently as painful. In other words, the two groups were only different in what term they used to label their visceral sensation and were otherwise similar with respect to the above-mentioned parameters. Observations that partially argue against such an explanation include previous findings where pain-predominant patients have been more likely to show sensitization of perceptual responses to rectal balloon distension after repetitive sigmoid stimulation (5). However, in that study, the perceptual thresholds were not directly compared with discomfort-predominant IBS patients.

Another possible explanation relates to differences in the involvement of affected visceral afferent pathways. Even though an extrapolation from subjective symptoms to underlying pathways is purely speculative, there are several possible explanations based on peripheral as well as central modulation systems for the current findings. If symptoms are mediated by information reaching the brain via both spinal and vagal afferent pathways, pain-predominant patients may have greater involvement of spinal pathways (transmitting pain) and discomfort-predominant patients may have greater involvement of vagal afferents (transmitting nonpainful sensations, including nausea). The observed higher prevalence of a nonpainful sensation (*i.e.*, nausea) in the pain-predominant group, however, argues against this explanation. Another possible explanation is related to differential involvement of low and high threshold spinal afferents in the two groups. Argument against this explanation arises from the observation that both groups reported similar overall GI symptom severity. In addition to peripheral theories to explain the predominance of pain in a subset of patients, there are several plausible explanations based on differences in central processing of visceral afferent information: If the amount and severity of visceral pain is partially related to the activation of brain regions modulating the unpleasantness of the pain experience (such as midcingulate cortex) (35), then greater activation of this brain region by vagal or spinal afferents could result in a greater likelihood of a given patient reporting his or her symptoms in terms of pain.

SUMMARY AND CONCLUSIONS

The findings of the current study do not support self-reported abdominal pain as the most debilitating symptom in IBS. Instead, they suggest that IBS is a disorder involving multiple types of visceral sensations, which may arise from the same peripheral and/or central dysfunction. Contrary to the generally accepted notion that pain is the most predominant symptom in IBS, twice as many patients self-classify their symptoms as discomfort-like without clear abdominal pain. These findings may have implications for current efforts aimed at development of visceral analgesics for the treatment of IBS symptoms. Furthermore, the current study supports the notion that regardless of what the most predominant symptom may be, the nonpain-predominant IBS subgroup suffers from similar degrees of psychological distress, QOL impairment, and increased health care use as do their pain-predominant counterparts. These findings are most consistent with a cognitive labeling bias whereby

similar sensations are reported as painful by some and discomfort-like by others.

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