Multidimensional Affect and Pain Survey (MAPS) in Inflammatory Bowel Disease (IBD) Patients

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Purpose: To determine the weight given by Inflammatory Bowel Disease patients to the three dimensions of pain in the Multidimensional Affect and Pain Survey (MAPS): Sensory, Suffering, and Well-being.

Results: Twenty-two Inflammatory Bowel Disease patients from our clinic responded to the 101-MAPS questionnaire. There were 18 patients with Crohn’s Disease and 4 patients with ulcerative colitis. Twelve of the 22 patients had inactive disease, and 10 patients had evidence of active disease. Patients with active disease reported an average score of 1.5 ± 0.2 on the Sensory supercluster compared to 0.7 ± 0.1 (p < 0.05) among those with inactive disease, and 2.0 ± 0.3 on the Suffering supercluster compared to 0.9 ± 0.2 (p < 0.05). There was no significant difference on the Well-being score between active disease and remission patients.

Conclusion: Despite increased sensory and emotional pain during active disease, IBD patients maintain coping strategies to preserve overall well-being and quality of life even during periods of active disease.

INTRODUCTION

Pain is a multidimensional experience that profoundly impacts patients’ quality of life. In patient care, pain assessment is essential as it is the “fifth vital sign” along with temperature, blood pressure, pulse and respiration rates (1). Traditionally, patients have rated pain on a single, unidimensional scale from 1 to 10, as demonstrated by the guidelines of the American Pain Society and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (2,3). However, Melzack and Casey (4) hypothesize that pain has three dimensions: sensory-discriminative, motivational-
affective, and cognitive-evaluative. Clark et al. (1) describe at least two dimensions, sensory and emotional, using an objective method of multidimensional scaling (MDS). Such multidimensional pain experiences are reflected by brain activity. Specifically, noxious stimuli activate areas in the somatosensory cortex, the emotion-modulating anterior cingulate gyrus, and the pre-frontal cortex which mediates cognitive function (5).

The Multidimensional Affect and Pain Survey (101-MAPS) is a validated pain assessment survey that classifies 101 items into three dimensions or super-clusters: Sensory (57 items), Suffering (26 items), and Well-being (18 items) (1,6). It is the only currently available pain assessment instrument that takes into account all recognized pain dimensions. MAPS is based on a dendrogram obtained by cluster analysis of similarity judgments of somatosensory and emotional descriptors by volunteers of various ethnicities. The data obtained by MAPS encompass those from several traditional questionnaires such as the McGill Pain Questionnaire, a unidimensional pain rating scale, the Profile of Mood Status (POMS) and the Quality of Life Questionnaire (FACT-G).

A significant symptom complex overlap exists between irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD) patients; both groups report chronic abdominal pain and diarrhea (7). One study reports that 33% of ulcerative colitis (UC) patients and 57% of Crohn’s disease (CD) patients experience IBS-like symptoms (7,8). Furthermore, a two to three fold increase in the prevalence of IBS-like symptoms has been described previously in IBD patients in longstanding remission compared to the general population (9). Hence, symptomatic IBD patients in disease remission may be inappropriately treated with escalating anti-inflammatory therapy for functional symptoms rather than for an IBD flare, leading to drug toxicity, unwarranted side effects, and inadequate symptom relief (9).

We aim to determine the weight given by patients with and without active IBD to each of the three pain dimensions using the MAPS questionnaire. In particular, we wish to establish the importance of affective and emotional components of IBD patients’ pain, in order to emphasize these aspects when considering patient care.

**METHODS**

The 101-MAPS is based on a dendrogram obtained by cluster analysis of similarity judgments of somatosensory and emotional descriptors by male and female college student volunteers of Puerto Rican, European-American, and African-American descent. Pain descriptors used in previous pain analyses were presented to 104 volunteers who sorted the words into 20–30 piles based on their assessment of the words’ similarities. Pair-wise similarity judgments were made between all possible pairings of the 20–30 piles. The final 101 descriptors were classified into three broader super-clusters (Sensory, Suffering, Well-being) and thirty sub-clusters via the Average-Linkage-Between-Groups algorithm (10).

**Patients**

English-speaking patients evaluated at our GI clinic from June to November of 2005 for an established diagnosis of IBD were offered the questionnaire. Within the office, twenty-two subjects within the five months completed a 101-MAPS questionnaire that evaluated sensory pain, emotional pain, and general well-being. Disease activity was based on history (diarrhea ≥6 bowel movements/day, blood in the stool, abdominal pain, fever), laboratory data (WBC >10,000, ESR >20, CRP >8), and the treating physicians’ assessment of disease state. Patients who did not meet the above criteria were categorized as inactive disease.

All patients gave written consent prior to participation in the study. Subjects who could not understand or were unable to fill in the questionnaire for any reason were excluded, as were IBD patients with severe disease requiring hospital admission and subjects with a diagnosis of IBS. Identifying code numbers given to each patient were kept separate from completed questionnaires.

**Statistical Methods**

The mean super-cluster scores obtained from patients with and without active disease were compared by Student t-test. Chi-square tests were performed to compare the frequencies with which the individual descriptors in each supercluster were rated 4 or higher.
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RESULTS

Twenty-two IBD patients (mean age 35, 11 males) completed the questionnaire. Seventeen were European-American and 5 were of Hispanic origin. Eighteen patients were diagnosed with Crohn’s disease and 4 with ulcerative colitis. The clinical features of the patients can be seen in Table 1. Twelve patients were inactive and 10 showed evidence of active disease, based on history (diarrhea, blood in the stool, abdominal pain, and fever), physical examination, laboratory data (WBC, ESR, and CRP), and the gastroenterologists’ global assessments of disease. Active patients scored significantly higher on the Sensory and Suffering superclusters than did inactive patients. There were no differences between the two groups in the Well Being supercluster (Table 2).

DISCUSSION

The present study demonstrates that the pain experiences of IBD patients differ during active compared with inactive phases of their disease. Not surprisingly, patients with active disease reported significantly more Sensory and Suffering dimensions of pain than did inactive patients. Disease activity affects the health-related quality of life (HRQoL) in IBD patients (11,12,13,14). Larsson et al. (15) found that, with increased disease activity, patients reported emotional distress and impaired HRQoL. Disease activity is based on symptoms, physical examination, laboratory parameters such as hemoglobin, white blood cell count, and CRP. Because specific molecular markers of inflammation are not, as yet, available, CRP and ESR as well as investigational markers such as fecal calprotectin and lactoferrin have been used as indirect measures of inflammation (16,17).

Quality of life has been assessed by several different questionnaires such as the Hospital Anxiety and Depression scale (HADS), the Short Health Scale (SHS), the SF-36 Health Survey and the Jalowiec Coping Scale (JCS). Larsson et al. (15) reported that coping was the same in patients in exacerbation as in those in remission. Coping encompasses the conscious ability to manage stress and stressful situations by developing optimistic and self-reliant strategies. Larsson’s et al. (15) concept of “coping” have similar properties to Knotkova and Clark’s (18) description of “Well-being” in the MAPS. There was no decrease in the Well-being score when the patients’ disease was active compared with when they were inactive in our study. This finding supplements that of Bayless et al (9), who reported reduced psychological general well-being in those IBD patients who had IBS-like symptoms.

MAPS assesses the multiple dimensions of the patients’ pain experiences (somatosensory pain, emotional pain, and feelings of well-being). Identifying the weight placed on the different dimensions of pain using this tool may help to determine if symptoms are due to IBD and appropriately target therapy for active disease. Although the role of IBS in IBD has often been discussed (9), it has been rarely studied (19). The lack of gold standard “markers” for both makes the diagnosis of IBD and IBS difficult in patients with symptoms of abdominal pain and diarrhea (19). The greater weight on both the Suffering and Sensory superclusters among patients with active disease in this study may reflect exacerbation in their disease. Further

Table 1. 
Patient Demographics

<table>
<thead>
<tr>
<th></th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>11 (50)</td>
</tr>
<tr>
<td>Mean Age (years)</td>
<td>35</td>
</tr>
<tr>
<td>Caucasian</td>
<td>17 (77)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5 (23)</td>
</tr>
<tr>
<td>Crohn’s Disease</td>
<td>18 (82)</td>
</tr>
<tr>
<td>Active</td>
<td>10 (56)</td>
</tr>
<tr>
<td>Inactive</td>
<td>8 (44)</td>
</tr>
<tr>
<td>Steroid Use</td>
<td>0</td>
</tr>
<tr>
<td>Surgery</td>
<td>7</td>
</tr>
<tr>
<td>Ulcerative Colitis</td>
<td>4 (18)</td>
</tr>
<tr>
<td>Active</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Inactive</td>
<td>4 (100)</td>
</tr>
<tr>
<td>Steroid Use</td>
<td>1</td>
</tr>
<tr>
<td>Surgery</td>
<td>1</td>
</tr>
</tbody>
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Table 2.
MAPS Supercluster Scores

<table>
<thead>
<tr>
<th>Disease Activity (History, PE, lab data, GI assessment)</th>
<th>Sensory</th>
<th>Suffering</th>
<th>Well Being</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active n = 10</td>
<td>1.5 (0.2)</td>
<td>2.0 (0.3)</td>
<td>2.5 (0.2)</td>
</tr>
<tr>
<td>Inactive n = 12</td>
<td>0.7 (0.1)</td>
<td>0.9 (0.2)</td>
<td>2.7 (0.3)</td>
</tr>
<tr>
<td>P value</td>
<td>&lt;0.03</td>
<td>&lt;0.04</td>
<td>&lt;0.63</td>
</tr>
<tr>
<td>Mean (SEM)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

investigation is warranted to assess whether the IBD patients who described their pain as an emotional experience exemplified IBS-like symptoms.

Several limitations exist in our study, including a small sample size. The pilot study was conducted at one institution, a specialized IBD center; this may have created bias in that patients developed greater rapport with their gastroenterologists than in the general population, possibly contributing to a greater sense of well-being in both the active and the inactive groups. Furthermore, the patients’ medications were not standardized during the pain assessments.

Despite these limitations, our study found that IBD patients exhibit pain with a greater emphasis on Sensory and Suffering dimensions during the active phase of disease compared to the inactive phase. Identifying which dimension of pain is most responsible for the individual patient’s symptoms may allow clinicians to better address the patient’s complaints, target medications appropriately, optimize management, and lead to greater patient satisfaction.

References