Pain Measurement in Hospitalized Adults with Sickle Cell Painful Episodes*

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ABSTRACT

The intensity, spatial distribution, and description of pain during the evolution of painful crises were studied in 23 hospitalized adult patients with sickle cell anemia during 60 acute painful episodes. The 10 cm Visual Analog Scale was used to measure the intensity of pain. The average pain severity score upon admission was $9.5 \pm 0.63$ (mean ± SD) and upon discharge was $4.8 \pm 0.97$. The dose or frequency of administering narcotic analgesics was reduced when the daily score of pain decreased by 2 or more on the scale. Painful areas of the body most frequently affected included the back, legs, knees, arms, chest, and abdomen in descending order. The words most often selected to describe the pain were throbbing, sharp, dull, and stabbing. Our data indicate that: (1) the use of a visual analog scale is feasible in hospitalized adult patients with sickle cell painful crisis; (2) the application of this scale is clinically useful in the titration of analgesics during crises; and (3) the use of this scale may be utilized to assist in the discharge planning of these patients.

Introduction

Recurrent painful episodes which require hospitalization and treatment with parenteral narcotic analgesics are the hallmark of sickle cell anemia. These painful crises are often not accompanied by objective signs and symptoms. This state of affairs often creates logistical problems in monitoring the severity of pain and its proper treatment. Moreover, pain cannot be said to have been relieved unless it has been measured by a method which is both accurate and sensitive. Because pain is a complex subjective experience, it has been difficult to measure reliably in clinical research. In this study, the nature of pain is described in adult patients with acute sickle cell painful episodes, especially its intensity, spatial distribution and response to analgesics.

Method

COMMUNICATION

The first step in the study was to communicate the method of pain measurement in a uniform fashion among...
involved personnel. Patients, nursing staff, and physicians were educated to a common scale. This was a 0 to 10 cm visual analog scale (VAS) stabilized by weights. The 0 represented no pain and the far end represented the worst pain imaginable. This allowed for common language in which to communicate the degree of pain experienced by the patients.

LOCATION OF PAIN

The spatial distribution of pain upon initial presentation was documented on every patient. This was achieved by asking the patients to mark the area of pain on a scaled drawing of the body. This information allowed us, also, to differentiate between the presenting crisis pain and another acute problem that might arise during hospitalization such as arthropathy, infection, etc.

PAIN DESCRIPTION

Patients were asked to give a verbal description of their pain. This was done by the McGill/Melzack tool. Patients selected one or more words that best described their pain.

Statistical analysis was done by the two-tailed t test for pained observations.

Results

Twenty-three adult patients (9 females and 14 males) with sickle cell anemia were studied during 60 painful crises. Their ages ranged between 18 and 43 years. The distribution of the 60 painful episodes studied by age and sex is summarized in Table I. Noteworthy is that 49 of the crises were in males and 11 were in females. All patients were treated with parenteral narcotic analgesics including meperidine, hydromorphone, or morphine sulfate. The choice of the analgesic and its dose was individualized for each patient as was described previously. In table II are summarized the results of pain measurement on admission and discharge from the hospital. Noteworthy is that the average pain severity score on admission was 9.5 cm. All patients had a score of >8 cm on admission. On discharge the average pain severity score was 4.8 cm (range 2 to 6.5 cm) which was significantly lower (P < 0.001) than that on admission.

The effect of parenteral narcotic analgesics on pain relief is summarized in Table III. Parenteral analgesia lowered the pain score by an average of 2.2 cm (range 0 to 4.5) on admission and 2.1 cm (range 1 to 4.5) before discharge. There was no significant difference between these two scores. Pain relief did not seem to be dependent on initial pain score.

<p>| TABLE I |
| Distribution of the Painful Crises Studied by Age and Sex |</p>
<table>
<thead>
<tr>
<th>Age Years</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 20</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>21 - 30</td>
<td>37</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td>31 - 40</td>
<td>10</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>41 - 50</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>11</td>
<td>60</td>
</tr>
</tbody>
</table>

<p>| TABLE II |
| Measurement of Pain on 10 cm Visual Analog Scale |</p>
<table>
<thead>
<tr>
<th>Time of Scoring</th>
<th>Score (cm)*</th>
<th>Range of Score (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission</td>
<td>(60) 9.5 ± 0.63</td>
<td>8 - 10</td>
</tr>
<tr>
<td>Discharge</td>
<td>(60) 4.8 ± 0.97##</td>
<td>2 - 6.5</td>
</tr>
</tbody>
</table>

*Score shown is the mean ± SD. Number of crises studied is shown in parentheses.
##P < 0.001 compared to the score on admission.
Thus, an individual with an initial score of 8 received about the same relief as someone with an initial score of 9.5. Most patients requested a decrease in their medication dose or frequency when their daily score decreased by 2 cm on the scale. Interestingly, patients would rarely get subjective relief that was lower than 5 cm on the VAS. Patients experienced moderate pain at a mean score of 4.8 cm upon discharge.

In table IV are summarized the spatial distribution of pain during crises. Painful areas of the body in descending frequency included the back (78 percent), legs (62 percent), knees (38 percent), arms (30 percent), chest (17 percent), and abdomen (13 percent). Most patients described their pain (table IV) as throbbing (68 percent of crises), sharp (37 percent), dull (15 percent), or stabbing (12 percent). Less frequent descriptors are outlined in table V.

**Discussion**

Pain, a subjective experience, has long been a major dilemma in the care of patients with sickle cell disease. The painful episodes that often complicate this disease are most difficult to manage. One reason for this difficulty lies with the
fact that measurement of this pain has been very unreliable. In sickle cell disease, as well as in most other pain syndromes, measurement often relied on the report of the individual in pain. Because this disease predisposes to chronic pain in addition to acute episodic pain, the individual with sickle cell disease often does not elicit expected signs of acute pain. If health care providers would look for these objective signs, the degree of pain of the patient in acute painful sickle cell crisis may be underestimated. Most individuals with this disease have learned diversional techniques, well described in chronic pain literature, as a means of pain management. Logistically and clinically, one is left with a major dilemma in the care of these patients. If one can not accurately measure this pain, one can not properly manage it.

In an attempt to rectify this problem, this study was undertaken to document the measurement of pain in hospitalized adult patients with sickle cell anemia, being treated for acute painful crises. Some of the issues that often arise during the treatment of sickle cell painful crises include the decision to decrease the dose of narcotic analgesics and discharge planning. Our study shows that a decrease in the pain score of 2 cm or more on 10 cm VAS is an indication to reduce the dose of administering narcotic analgesics. Moreover, once the pain score is about 5 cm, discharge from the hospital may be considered.

An interesting finding in this study is that crisis pain does not seem to resolve completely, since all patients had some degree of mild pain upon discharge. Another important aspect of this study is documentation of the site and description of pain on admission and daily thereafter. Monitoring these aspects of the painful crisis allows providers to understand the evolution of painful episodes in individual patients. Moreover, if the site and description of pain change from those on admission, one should look for the presence of other complications of this disease such as infection.

Acknowledgments

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References