ABSTRACT

Objective: To evaluate pain characteristics and alterations, demonstrated by children hospitalized with cancer, before and after therapeutic play. Methods: A descriptive field research using a quantitative approach conducted at the Pediatric Cancer Clinic of a public hospital, in the city of São Paulo. The data included a sample of 16 children aged 3-9 years using analgesic medication. Results: Among the children participating in the study, 53.8% classified their pain as 1 in a scale of 0 to 5 before therapeutic play and 23.1% classified their pain as 0 after therapeutic play. Conclusions: The alterations observed in relation to pain characteristics are strong indications that therapeutic play is an effective auxiliary strategy for pain management in children.

Keywords: Pain measurement; Child, hospitalized; Play and playthings; Pediatric oncology; Pediatric nursing; Neoplasms

INTRODUCTION

Generally speaking, hospitalization and sickness are stressful experiences for a child causing behavioral changes during hospital stay and even after discharge. Many factors influence their reaction to these situations, particularly their stage of development, and their innate and acquired ability to cope with the situation(1-4).

Neoplastic disorders are among the most stressful diseases for children and their parents, due to the numerous procedures performed and their lack of knowledge on the issue. They are considered to be the main cause of death in children after infancy and are the third leading cause of infant death in the USA after infections and malnutrition, mainly between the ages of one and five years(4). Nevertheless, in Brazil and other developing countries the incidence of neoplasms is more common in adults(5).

Among the main factors that cause fear and anxiety in neoplasia patients is pain, which is reported by 60 to 80% of patients, and is one of the main factors that determines the level of suffering related to the disease, even when compared to death(6).

According to the International Association for the Study of Pain, pain is defined as an “unpleasant sensory and emotional experience associated with actual or
potential tissue damage or described in terms of such damage (4).

Pain can be acute or chronic. It is classified as acute when it is the result of a lesion and should disappear during the recovery period from the event that caused it. Acute pain will not usually last more than three months and should be treated only with analgesics and therapeutic support to the triggering factor (6).

Pain that lasts for more than three months is considered chronic. Often the causing factor is no longer active or is not possible to cure, as in the case of oncologic patients. In this situation, pain is treated as a pathologic process and not only as a symptom (6).

Pain related to neoplastic disorders is considered a “global medical emergency” by the World Health Organization (WHO) that established treatment standards based on analgesic agents, mainly due to the fact that it is one of the most accessible and effective methods to relieve pain (6).

For mild pain, regular analgesics and nonsteroidal anti-inflammatory drugs are used. When it persists or increases mild opioids are added to the medication regimen and, as a last resort, could be substituted for strong opioids. Anti-depressive medication, antiemetics and gastric mucosal barrier protectors could also be prescribed (6).

Nevertheless, for successful pain control, an adequate assessment is important. There are various instruments available to measure pain that should be simple to use and appropriate for the patient’s level of understanding. These tools very relevant for the evaluator, who cannot be influenced by their own perception of pain, but rather consider the data supplied by patients (6).

Among the instruments available for pain evaluation there are one-dimensional intensity scales, such as the numerical verbal scale (the patients classify their pain according to intensity in a progressive scale from 0 to 10) and the visual numerical scale (printed visual diagrams that help patients express the intensity of their pain) (6).

For small children who cannot verbalize, behavior scales are used, enabling the caregiver to identify the occurrence of pain and quantify it in a less subjective method using a score (6).

When a young child can talk, the Baker Faces Pain Scale is the best option. It consists of six faces drawn with expressions that vary from a smiling face to indicate no pain, to a crying face representing the worst pain that the child can imagine. The significance of each face is explained to the child and then he/she is asked to pick the face that corresponds to the pain he/she is feeling. The method is not foolproof and if the significance of the faces is not clearly explained to the child, he/she could choose the face based on his/her mood even though he/she is not in pain and, therefore, invalidate the information (6).

Despite the current efficacy of pharmacological pain treatment, relief is not always obtained, since other factors can interfere, alleviating or intensifying the pain, as in the case of emotional disorders. In this situation, other pain management strategies, such as therapeutic play may help when patients are children (1-4,8)

“Playing is one of the most important aspects in a child’s life and one of the most efficient instruments to relieve stress (6). It has many functions (recreation, stimulation, socialization, release of tension...) and can be classified in various types, emphasizing among them, therapeutic play (9).

Therapeutic play (TP) is defined as a structured play activity that enables the child to release the anxiety generated by abnormal situations for his/her age, that are usually threatening (such as hospitalization), and should be used whenever the child has difficulty to understand or cope with the experience. It enables children to express their feelings and gives the professional a better understanding of the child’s needs and feelings (9-11).

Even though based on the principles of play therapy, therapeutic play differs from this due to the following: it can be performed by different professionals (since the child’s actions and attitudes are not interpreted by them, they merely reflect the child verbal expressions); it can be indicated for any child that experiences a crisis situation (for example, hospitalization); and can be conducted anywhere, including the child’s bed (9-11).

Play therapy is a psychiatric technique in which the therapist analyzes and gives feedback to the patients on the situations observed, and is recommended for children with emotional disorders. It is conducted by a psychiatrist, psychologist or psychiatric nurse and requires a well controlled environment (9-12).

Therapeutic play has been frequently used by nurses and there are many studies on the subject in medical literature (1-3,8-11,13). The use of this technique by nurses is guaranteed by the Federal Board of Nurses (COFEN) in accordance with Resolution No. 295/2004 (14).

The fact that therapeutic play is still rarely used in medical practice, despite the many studies highlighting its benefits, motivated us to conduct this study in order to investigate its use for pain management in children with cancer.

OBJECTIVES

• to evaluate pain characteristics demonstrated by hospitalized children with cancer, before and after a therapeutic play session;
• to identify changes in pain characteristics presented by children after being submitted to therapeutic play.
METHODS

It is a descriptive field research using a quantitative approach and conducted in the cancer ward of a specialized pediatric public hospital in the city of Sao Paulo.

The sample consisted of 16 children admitted to the ward between September and November 2004, using the following selection criteria: age between three and nine years, good overall health status and use of analgesic medication.

Data collection began after approval by the Research Ethics Committee of the Instituto Israelita de Ensino e Pesquisa Albert Einstein and authorization from the hospital where the research was conducted (Hospital Infantil Darcy Vargas). First, the research project and the child proposed involvement were explained to the child and her companion. If the child agreed to participate and her parents or legal guardian authorized the participation, an informed consent, prepared in accordance with the resolution 196/96 of the Ministry of Health, was presented for signing. The researcher’s letter of intent was also presented, guaranteeing confidentiality of information received and its exclusive use for this research.

The data were collected through observation and interviews with the child. Initially, an assessment of the child was made in relation to the presence and intensity of pain, using a form to record data.

In addition to the child identification, the form contained a checklist of pain-related behaviors, as described by Nanda(15) and Carpenito(16), that were observed before and after the therapeutic play session.

The print-out also contained the faces pain scale, proposed by Wong(4), and a diagram of the human body where the researcher highlighted the location and extent of pain as indicated by the child.

Roughly 10 minutes after the child initial pain evaluation, he/she was submitted to a session of dramatic therapeutic play that consists in letting the child play freely with the toys offered by the researcher. This type of activity enables children to express their feelings and fantasies, to relieve tension and to communicate more effectively with the adult(9-11).

The therapeutic play session was conducted with all children, individually, at the location chosen by them and in accordance with the principles proposed by Axline(12). The child was invited to play and if he/she accepted, was informed about the duration of the playtime and the necessity to return the toys at the end of the session. The toys were offered to the child by the researcher, who did not interfere in the playing, and participated only when the child asked. The companion was informed about the intent of the activity and the importance to not spontaneously interfere while the child was playing(9,12).

The toys included dolls representing family members and the hospital staff, household and hospital devices and material for drawing and painting as recommended by the medical literature(1,9-11). The sessions lasted between 15 and 45 minutes and the observations made were recorded in writing on a separate print-out.

At the end of the therapeutic play session, a new assessment was made of the child in relation to the presence of pain and its characteristics using the same form as mentioned earlier.

Quantitative analyses were made using the data, and the results were presented, in relative and absolute frequency, in the form of tables and graphs.

RESULTS

Among the children who participated in the study, the majority were aged 3 to 4 years (7; 43.7%), as shown in table 1, and the mean age was 5.8 years (standard deviation = 2.3 years), with equal distribution in relation to gender.

Table 1. Distribution of children per age and sex. Sao Paulo, 2004

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>3y – 4y 11m</td>
<td>02</td>
<td>17.5</td>
<td>04</td>
<td>25.00</td>
<td>07</td>
<td>43.75</td>
</tr>
<tr>
<td>5y – 6y 11m</td>
<td>01</td>
<td>6.25</td>
<td>02</td>
<td>12.50</td>
<td>03</td>
<td>18.75</td>
</tr>
<tr>
<td>7y – 9y 11m</td>
<td>04</td>
<td>25.00</td>
<td>02</td>
<td>12.50</td>
<td>06</td>
<td>37.50</td>
</tr>
<tr>
<td>Total</td>
<td>08</td>
<td>50.00</td>
<td>08</td>
<td>50.00</td>
<td>16</td>
<td>100.00</td>
</tr>
</tbody>
</table>

In regard to diagnosis, the highest incidences were for acute lymphoblastic leukemia (ALL) and acute myelogenous leukemia (AML), with six (37.5%) and three (18.75%) cases, respectively (table 2).

In relation to length of hospitalization, a greater number of the children remained at hospital for 1 to 4 days (8.50%) to receive a chemotherapy cycle (remission induction, remission and maintenance) or for thrombocytopenia treatment. Only three children (18.75%) remained at hospital for more than ten days and one stayed longer than 20 days (table 2).

Table 2. Distribution of children per diagnosis and length of hospital stay. Sao Paulo, 2004

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>1 - 4</th>
<th></th>
<th>5 - 9</th>
<th></th>
<th>Over 10</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>ALL</td>
<td>03</td>
<td>18.75</td>
<td>02</td>
<td>12.50</td>
<td>01</td>
<td>6.25</td>
<td>06</td>
<td>37.50</td>
</tr>
<tr>
<td>AML</td>
<td>02</td>
<td>12.50</td>
<td>-</td>
<td>-</td>
<td>01</td>
<td>6.25</td>
<td>03</td>
<td>18.75</td>
</tr>
<tr>
<td>Neuroblastoma</td>
<td>01</td>
<td>6.25</td>
<td>01</td>
<td>6.25</td>
<td>-</td>
<td>-</td>
<td>02</td>
<td>12.50</td>
</tr>
<tr>
<td>Others*</td>
<td>02</td>
<td>12.50</td>
<td>02</td>
<td>12.50</td>
<td>01</td>
<td>6.25</td>
<td>05</td>
<td>31.25</td>
</tr>
<tr>
<td>Total</td>
<td>08</td>
<td>50.00</td>
<td>05</td>
<td>31.25</td>
<td>03</td>
<td>18.75</td>
<td>16</td>
<td>100.00</td>
</tr>
</tbody>
</table>

* Non-Hodgkin lymphomas (NHL). Boné tumor, leukosis, neutropenia and biphenotypic leukemia
When assessing pain intensity, as indicated by the children using the face scale, it was confirmed that most of them classified their pain as “hurts a little bit” or equal to one (14; 53.8%) and “hurts a little more” or equal to two (7; 26.9%) before the play session. None of them said that they had no pain (equal to zero) or intense pain (equal to five) as shown in table 3.

In relation to pain location, most of the complaints were in the upper limbs (11; 42.3%) and chest (8; 30.7%) (table 3). Sometimes the child pointed to more than one place on the drawing of the human body, but did not always report the same intensity for both locations using the face scale.

The statistical analysis using the Wilcoxon Signed Rank Test revealed that the differences are only significant for the pain scores related to the chest ($\alpha = 0.046$) and upper limbs ($\alpha = 0.014$), which were the locations indicated more often by the children in pain (table 5).

The pain evaluation conducted after the therapeutic play session revealed that some children (3; 23.1%) reported they had no pain (or zero on the face scale). And those who presented pain classified their pain as “hurts a little bit” or equal to one (8; 61.5%) and “hurts a little more” or equal to two (1; 7.7%) (table 4). Comparing the average of the pain scores for the different body segments indicated by the same child, it was observed that most (12; 75%) also presented lower scores after the play session, which was statistically significant ($\alpha = 0.002$).

The analysis of the characteristics related to pain in the children observed by the researcher, confirmed that the total number reduced after the play session, going from 60 to 40. It is worth noting that during the period between the two pain evaluations, none of the children were given analgesic medication that could influence the results before and after the play session.

The most common pain characteristics demonstrated by the children included: change in appetite, verbal report of pain, weight changes and defensive behavior. All pain characteristics were seen less often after the session, except for weight change, identified in 10 children (62.5%), since it is difficult to notice this type of change in the short timeframe between the two pain assessments. The report of no pain, which had not been reported by any child before the session was reported by three of them (11.63%) after it (graph 1).

Nevertheless, when considering the average of the pain scores for the different body segments indicated by the same child, it was observed that most (12; 75%) also presented lower scores after the play session, which was statistically significant ($\alpha = 0.002$).

The statistical analysis using the Wilcoxon Signed Rank Test revealed that the differences are only significant for the pain scores related to the chest ($\alpha = 0.046$) and upper limbs ($\alpha = 0.014$), which were the locations indicated more often by the children in pain (table 5).

### Table 3. Assessing intensity and location of pain by the child through faces scale before the therapeutic play session. Sao Paulo, 2004

<table>
<thead>
<tr>
<th>Pain location</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper limbs</td>
<td>06</td>
<td>02</td>
<td>02</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>14</td>
</tr>
<tr>
<td>Chest</td>
<td>05</td>
<td>03</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>00</td>
<td>11</td>
</tr>
<tr>
<td>Lower limbs</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>08</td>
</tr>
<tr>
<td>Head</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>03</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>03</td>
<td>03</td>
<td>03</td>
<td>02</td>
<td>01</td>
<td>26</td>
</tr>
</tbody>
</table>

### Table 4. Assessing intensity and location of pain by the child through faces scale after the therapeutic play session. Sao Paulo, 2004

<table>
<thead>
<tr>
<th>Pain location</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest</td>
<td>02</td>
<td>03</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>00</td>
<td>08</td>
</tr>
<tr>
<td>Upper limbs</td>
<td>03</td>
<td>03</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>10</td>
</tr>
<tr>
<td>Lower limbs</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>05</td>
</tr>
<tr>
<td>Head</td>
<td>02</td>
<td>02</td>
<td>02</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>09</td>
</tr>
<tr>
<td>Total</td>
<td>03</td>
<td>05</td>
<td>05</td>
<td>05</td>
<td>03</td>
<td>03</td>
<td>16</td>
</tr>
</tbody>
</table>

### Table 5. Comparing pain scores presented by the same child before and after the therapeutic play session. Sao Paulo, 2005

<table>
<thead>
<tr>
<th>Body segment presenting pain</th>
<th>Same score</th>
<th>Decreased score</th>
<th>Increased score</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest</td>
<td>12</td>
<td>04</td>
<td>25.00</td>
<td>16</td>
</tr>
<tr>
<td>Upper limbs</td>
<td>09</td>
<td>07</td>
<td>43.75</td>
<td>16</td>
</tr>
<tr>
<td>Lower limbs</td>
<td>11</td>
<td>04</td>
<td>25.00</td>
<td>01</td>
</tr>
<tr>
<td>Head</td>
<td>13</td>
<td>03</td>
<td>18.75</td>
<td>16</td>
</tr>
</tbody>
</table>

Wilcoxon test: $\alpha=0.046$ for pain scores related to the chest; $\alpha=0.014$ for pain scores related to the upper limbs; $\alpha=0.131$ for pain scores related to the lower limbs; $\alpha=0.083$ for pain scores related to the head.
In relation to appetite changes (lack of appetite), 10 children (62.5%) reported it before the session and just seven (43.75%), after the session. Ten children (62.5%) also complained of pain before the session and only eight (50%) continued to complain of pain after the session. In relation to defensive behavior, four presented it before the session, remaining in the bed or armchair, with a look of distrust and refusing to make verbal contact, of which only one (6.25%) continued to present it after the session.

Comparing the pain characteristics presented by the same child before and after the play session, it was observed that nearly all children did not present any differences or, in other words, the pain behavior remained nonexistent or present after the play session (table 6).

None of the differences observed, that is, when the child no longer presented a specific characteristic or reported it after the play session, were statistically significant using the McNemar test and presented a values much higher than 0.05, as shown in table 6.

**DISCUSSION**

The majority of the children had leukemia (ALL and AML) which is the most common type of cancer during infancy, representing 30% of the total number of cases and affecting children, adolescents and young adults. Nevertheless, 50% of cases of acute lymphoblastic leukemia (ALL) occur in patients younger than five years, coinciding with the age group and the diagnosis of higher occurrence among the children in the sample (17-19).

Most of them were hospitalized for a short period of time. Usually, the admissions to pediatric cancer clinics vary between two extremes, they can be a one time event for a long duration or recurring events for short durations, particularly during chemotherapy cycles (20).

In regard to the presence of pain, the children usually referred to it in different parts of their body, of which the location reported most often was the upper limbs due to the presence of peripheral and central venous catheters. The causes of cancer pain are related not only to the actual disease, due to tumors attacking certain organs, but also to treatments, such as surgery, radiation therapy, chemotherapy (which can cause polyneuropathies in some cases, followed by arthralgia and myalgia) and the diagnostic procedures (21-22).

Oncologic diseases are usually accompanied by unpleasant routines, such as long hospital stays, aggressive therapies, invasive and painful procedures and collateral effects resulting from treatment. The children also have to live with the separation from their families during the hospital stay and a grim prognosis despite the prospect of cure in a large number of cases (5).

Therefore, pain is one of the most common and stressful symptoms for children with cancer and their families. According to data from the Hospital do Câncer, in Sao Paulo, children report pain during 25% of outpatient visits, 50% of hospital visits and 80% of diagnostic and therapeutic procedures. Since it is difficult to assess the presence of pain, especially in children, these rates are believed to be understated (6).

In relation to the pain characteristics confirmed by the children in the sample, the majority of them reported mild pain (intensity 1 on the face scale). It is worth emphasizing that pain medication had been prescribed for all of them which could justify the high incidence of lower intensity pain.

After the play session, the majority of the children continued to report mild pain although with lower intensity than before. Nevertheless, the number of children who reported having no pain increased and none of the children reported pain in the intensity range of 3 and 4 as before.

When dealing with hospitalized children, playing can be recreational as well as therapeutic; positively influencing emotional and physical recovery and making the hospitalization process less traumatic. It helps the child to reveal their feelings and thoughts, fostering satisfaction, entertainment and spontaneity. While playing they release their fears, anger, frustration and anxiety (1,4,8,9).
It can also help adults to identify the existence of sources of discomfort for the child, as it is easier for them to express themselves while playing. Note that a disinterest in playing is one of the signs observed among children who are in pain.

During two studies conducted on children submitted to cardiac surgery, it was confirmed that pain was one of the reasons for children to stop playing during their stay in the ICU\(^{(11,23)}\).

Despite the great advances in diagnostic and therapeutic medicine in relation to cancer during childhood, to date very little has been accomplished in the area of quality of care for pain management in children. The care remains lacking in some institutions, if not in the prescription of adequate analgesics, at least in relation to the identification of pain symptoms and behavior demonstrated by the child.

In addition to verbal complaints, it is necessary to observe the reactions that indicate the presence of pain demonstrated by children, because even though they are able to verbalize the pain, it is difficult for them to express what they feel. Crying, sadness, seclusion, and reduced participation in activities, characteristics also seen in the children in the sample, can be indications of the presence of pain and/or discomfort, especially when the child is younger than four years\(^{(23)}\). Therefore, an interest in playing is a positive indicator of the child’s well being that should be valued by the adults who care for them.

As such, in addition to the pain relieving benefits of playing, whether by reducing anxiety and stress and improving the child’s mood or simply as a distraction technique, it can also significantly help the professional to identify the presence of pain and its characteristics (location and intensity) as long as they are willing to play with the child.

**CONCLUSIONS**

The data revealed that there was an improvement in the pain situation of the children observed, both in relation to the child’s perception and verbal report as well as the researcher’s observations based on the pain behavior demonstrated by the child.

In relation to pain location, it was confirmed that the children indicated the upper limbs more often and it is related to the punctures for peripheral and central venous catheters. Pain intensity varied between the scales one and two before the session and between zero and two in the evaluation after the session.

The total number of pain characteristics observed in the 16 children was reduced from 60 to 40 after the play session, with a confirmed reduction in the number of occurrences of almost all of them with the exception of change in weight.

Therapeutic play in this study proved to be an efficient and helpful strategy for pain relief, confirming, once again, the data found in medical literature. Nevertheless, further studies with larger samples should be conducted to confirm the results presented.

**ACKNOWLEDGEMENTS**

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