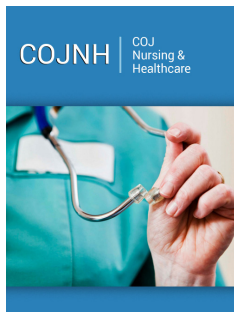


Implementation of Nursing Care Plan Based on Symptom Management Theory in a Pediatric Patient Followed with a Diagnosis of Osteosarcoma: Case Report

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Abstract

Osteosarcoma is the first most common childhood bone tumour derived from mesenchymal stem cells. Osteosarcoma occurs mostly in the first 20 years of life and the risk decreases with advancing age. The aim of this study was to evaluate the nursing care process according to symptom management theory in a paediatric patient with osteosarcoma in paediatric oncology clinic. The patient was given nursing care for the symptoms experienced in line with the dimensions in the Symptom Management Theory, and his compliance with the treatment and symptom management process was evaluated. A 15-year-old male patient was diagnosed with osteosarcoma 9 months ago. After the surgical operation, he was re-admitted to the clinic to receive the 3rd week of the EURAMOS protocol. Oral mucositis (Grade 2), nausea, vomiting and diarrhoea were observed after high dose methotrexate treatment in the 2nd week of the treatment period. Symptoms were evaluated daily during the 7-day symptom management process. Appropriate nursing interventions for nursing diagnoses were determined and implemented. Oral mucositis was evaluated as Grade 0 at the end of the 7th day. In nausea-vomiting, the number of vomiting after the first 3 days was evaluated as 0. The number of diarrhoea after two days was evaluated as 0. According to the study's findings, it has been determined that the Symptom Management Theory can be used in the management of symptoms occurring in children with a diagnosis of osteosarcoma following chemotherapy treatment. Systematic and comprehensive assessment of symptoms, the planning of appropriate nursing interventions, and the use of both pharmacological and non-pharmacological methods in practice are believed to be effective in reducing symptoms.

Keywords: Child; Nursing care; Osteosarcoma; Symptom Management

Introduction

Osteosarcoma is a common primary malignant tumour of bone tissue proliferating from mesenchymal stem cells. It is among the first most common childhood bone tumours in children and adolescents. The incidence of the disease peaks in adolescence and this is thought to coincide with physical growth [1,2]. Osteosarcoma is mostly seen in the first 20 years of life, but the risk decreases in later ages. Approximately 4.4 cases of osteosarcoma per million children are reported each year. In the United States, approximately 400 new cases are diagnosed each year in children and young adults. While the incidence of osteosarcoma has remained relatively stable over the last 40-50 years, mortality rates have decreased, especially due to the introduction of multi-agent chemotherapy [3]. Although osteosarcoma can be found in any bone in the body, the most common sites are around the knee and proximal humerus. The diagnosis of osteosarcoma is based on the imaging findings of patients presenting with pain, limitation of movement and a palpable mass, most commonly after biopsy of a mass located in the metaphysis of long bones. In the treatment of osteosarcoma, neoadjuvant chemotherapy is followed by a surgical operation in which the tumour is completely removed

with negative margins. Although chemotherapy treatment protocols are effective in increasing the survival rates of children, they cause many physical and psychosocial side effects. Common symptoms in children and adolescents are pain, mucositis, nausea-vomiting, fatigue, depression, and these symptoms have a negative impact on quality of life [4-7].

Nursing theories contain propositions that represent the definition of the characteristics and dimensions of a concept in general. The application of theory in the nursing care process aims to provide scientific support to clinical practice and nursing actions and to improve the quality of care. Symptom is a subjective experience that may differ according to the biopsychosocial status, emotions or perceptions of the individual. Symptom Management Theory (SMT) aims to guide research by suggesting specific questions and assumptions for subjective and systematic assessment of symptoms, planning interventions, guiding clinical practice, and symptom management [8]. The theory was revised in 2001 and in its updated version, the symptom management process was included in the context of nursing science fields (person, environment, health and disease). In 2008, with a new update, the model was developed as Symptom Management Theory (SMT). The assumptions of the theory are based on the relationships between its variables: assessment of symptoms based on the perception of the individual experiencing and assessing them; control of all symptoms; strategies for managing symptoms that extend beyond the individual to the family, group or work environment; the management of symptoms emphasizes that symptom management is a dynamic process that can be changed according to the results obtained by the individual and its relationships with variables and theory domains (person, environment, health and disease). The model recognizes the symptom perception and expression of the individual experiencing the symptom as the gold standard in the assessment of symptoms. The three basic concepts of the SDM, which addresses the symptom management process in a multidimensional manner, are symptom experience, symptom management strategies and outcomes; change in the symptom status (frequency, severity and/or symptom distress) is the main outcome of interest. According to the model, effective symptom management can only be achieved by carefully addressing these three concepts [9-11]. It has been determined that symptom management model is not widely used in symptom management of childhood cancers and studies on the subject are limited. Accordingly, in this study, it is aimed to evaluate the nursing care process according to the symptom management theory of a pediatric patient followed up with osteosarcoma in the paediatric oncology clinic.

Case Presentation

Name: K.A. Age: 15 Gender: Male Medical diagnosis: Osteosarcoma

Weight: 111 kg Height: 187 cm.

Health history

9 months ago, he was referred to the district state hospital for further examination and treatment due to sudden onset of

pain and swelling (mass) in the left knee. The mass was removed and the patient, who underwent two surgical interventions, was diagnosed with stage-3 osteosarcoma as a result of peg-biopsy. After the diagnosis, chemotherapy treatment was started and the patient was re-admitted to the clinic to receive the 3rd week drugs of EURAMOS protocol (Cisplatin+Ifosfamide+Cyclophosphamide+Doxorubicin+ Methotrexate). The patient is followed immobilized as much as possible due to the risk of fracture. The left leg will be in a splint for 3 months after the operation. The patient received chemotherapy for 72 hours.

Laboratory information

Table 1.

Table 1:

Na+: 139 mEq/L (136-145)	Haematocrit: 28.9% (33-41)
K+: 4.6mEq/L (3.5-5)	Hemoglobin:11.16g/dL(11.5-14.5)
RBC: 3.89 10 ⁶ /μL (3.8-4.9)	PLT: 90 10 ³ /μL (150-450)
Leukocyte: 2.86 10 ³ /μL (4.5-13.5) C	Neutrophil: %37.5 (40-59)

Drug therapy

5% dextrose+0.9% NaCl 150cc/h (½ ampoule KCl per 500 c), Acyclovir vial 3x500mg, Piperacillin Tazobactam 3x4.5gr, Proton pump inhibitor 2x40mg, Zofer ampoule 3x8mg, Dekort ampoule 4x2mg, Flagly 3x 500mg.

Data collection tools

SSPedi - Symptom Screening Tool in Paediatric Patients, World Health Organization Oral Toxicity Scale, Daily Number and Severity of Nausea and Vomiting Chart were used to evaluate the symptoms of the child.

Symptom Screening Tool in Paediatric Patients (SSPedi)

The Symptom Screening Tool in Paediatric Patients (SSPedi) was developed to evaluate both the symptoms and the severity of symptoms in children. The Turkish validity and reliability study of the electronic version of the Symptom Screening Tool in Paediatric Patients (SSPedi) was conducted by Çelik et al. [12]. The screening tool includes 15 symptoms that evaluate the symptoms experienced by children yesterday and today. Each symptom is evaluated with a 5-point Likert-type scoring. The tool has both paper and electronic forms [13]. In 2018, Dupuis et al. [14] conducted a validity and reliability study of the electronic form of SSPedi in children aged 8-18 years who were followed up with a diagnosis of cancer. The validity reliability cronbach alpha coefficient of the screening tool for the electronic form was found to be 0.88 [14]. The scale score range varies between 0-60. A high score indicates an increase in the number of symptoms and discomfort.

World health organization oral toxicity scale

The oral mucosa assessment form is a World Health Organization (WHO) classification tool that is widely used in clinical trials to describe toxicities caused by cytostatic agents. In this classification, anatomical changes related to the oral mucosa

and the severity of mucositis are graded between “zero” and “four”. While grade 0 indicates that there is no mucositis, grade 1 indicates that this problem is mild, grade 2 indicates moderate, grade 3 indicates serious and grade 4 indicates life-threatening [15,16].

Table Indicating the number and severity of nausea and vomiting

In the chart used in the clinic where the treatment of the child is followed up, the severity of nausea-vomiting in 24 hours is evaluated between 0 and 10. In addition, the severity of nausea,

number of nausea, severity of vomiting and number of vomiting can be monitored hourly in 24 hours. The sub-dimensions in the Symptom Management Theory are useful for the evaluation of symptoms and determination of appropriate interventions. In our study, the care process was carried out and evaluated under the titles of symptoms experienced, symptom management strategies and outcomes in line with the dimensions of the theory in order to plan and implement appropriate interventions after the evaluation of the patient’s symptoms (Table 2).

Table 2: Management of symptoms according to symptom management theory.

Experienced Symptom	Symptom Management Strategies	Results
Oral Mukozit	Pharmacological Method; Oral mucositis (Grade 2): Oral care protocol (Mycostatin 3x25. cc+Benzidamine mouthwash 4x1 scale+ Glutamine 3x5gr) was applied. Non-pharmacological Method; Mouthwash with black mulberry extract and chamomile tea was used 4 times a day.	Oral mucositis evaluation at the end of the application Day 1= Grade 2 Day 2= Grade 2 Day 3= Grade 2 Day 4= Grade 1 Day 5= Grade 1 Day 6= Grade 1 Day 7= Grade 0.
Nausea and Vomiting	Pharmacological Method; Daily treatment, Zofer ampoule 3x8mg and Dekort ampoule 4x2mg were administered when there was a feeling of vomiting. Non-pharmacological Method; Ginger tea (only when nausea occurred) was used.	The number of vomiting after the first 4 days was evaluated as 0.
Diarea	Pharmacological Method; Adequate hydration of the patient was provided (3000-3500 fluid per m ²) Flagly 3x 500mg used	The number of diarrhoea was 5-6 on the first 2 days and 0 on the 3rd day.

Discussion

The aim in the management of symptoms that occur due to treatment and disease in children with cancer diagnosis is to prevent and control symptoms and to improve the quality of life of the child. In this direction, evaluating and controlling the symptoms of children holistically can help children to have a comfortable treatment process [17,18]. In the case, firstly, the symptoms that the child experienced intensely were determined and the factors affecting them were evaluated. After the evaluation, interventions were planned and implemented by taking into account the dimensions of Symptom Management Theory, the child’s symptoms were reduced and the quality of life was increased. During treatment, children may experience many physical, psychological, social and emotional symptoms related to both the disease and treatment [19,20]. The most common symptoms in children diagnosed with cancer are fatigue, deterioration in comfort, weakness, sleep problems, feeling sad, anxious, angry, anxiety, nausea, vomiting, pain, constipation, oral mucositis, anorexia, diarrhoea and alopecia [13,14,21] (Rodgers et al., 2019). In our case, the symptoms of oral mucositis, nausea, vomiting and diarrhoea were common and severe in the child as a result of chemotherapy treatment. Symptom identification and assessment can shape symptom knowledge, symptom interpretation, and beliefs and practices regarding the treatment and care of cancer [22]. Valid and reliable assessment tools were used for symptom assessment. In our study, the valid and reliable SSPedi and the World Health Organisation Oral Toxicity Beard were used to detect and evaluate the child’s symptoms.

Conclusion

According to the results of the study, it was determined that Symptom Management Theory can be used in the management of symptoms that occur as a result of chemotherapy treatment of children with osteosarcoma. Systematic and holistic evaluation of symptoms, planning of appropriate nursing interventions, use of pharmacological and nan-pharmacological methods in applications are thought to be effective in reducing symptoms.

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