

Hematopoietic Stem Cell Transplantation: case study of a patient with severe mucositis

Transplante de Células-Tronco Hematopoéticas: estudo de caso de um paciente com mucosite severa

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Abstract

It is estimated that 50% to 80% of patients undergoing hematopoietic stem cells (HSCT) transplantation developed oral mucositis with significant severity and marked morbidity. The complications and complexity of this condition require the nursing team to continue training based on the updating of clinical practices stemming from scientific evidence. The aim is to present a case study, describing the nursing diagnoses of a patient submitted to autologous hematopoietic stem cell transplantation that evolved to a severe mucositis. This is a case study of a patient with Hodgkin's lymphoma undergoing HSCT. Data were collected from October to December 2015, from the patient's medical records. There were hospitalization 51 days, the main nursing diagnoses related to mucositis were: (1) nausea; (2) risk for infection; (3) unbalanced nutrition; (4) impaired swallowing; (5) diarrhea; (6) impaired oral mucosa; (7) acute pain; (8) hyperthermia and (9) risk of bleeding. Mucositis is a complication commonly found in patients undergoing transplantation. Therefore, it is important that the nurse develops an accurate clinical view to detect in the subtlety of the signs and symptoms the risk for the affection worsening.

Keywords: Mucositis; Hematopoietic Stem Cell Transplantation; Nursing Diagnosis; Nursing Process.

Resumo

Estima-se que 50% a 80% dos pacientes submetidos ao transplante de células-tronco hematopoéticas (TCTH) desenvolveram mucosite oral com significativa gravidade e acentuada morbidade. As complicações e a complexidade desta afecção exigem da equipe de enfermagem um contínuo treinamento pautado na atualização de práticas clínicas oriundas de evidências científicas. O objetivo é apresentar um estudo de caso, descrevendo os diagnósticos de enfermagem de um paciente submetido ao transplante de células-tronco hematopoéticas autólogo que evoluiu para uma mucosite severa. Trata-se de um estudo de caso de um paciente com Linfoma de Hodgkin submetido ao TCTH. Os dados foram coletados no período de outubro a dezembro de 2015, a partir do prontuário do paciente. Foram 51 dias de hospitalização, os principais diagnósticos de enfermagem relacionados à mucosite foram: (1) náusea; (2) risco para infecção; (3) nutrição desequilibrada; (4) deglutição prejudicada; (5) diarreia; (6) mucosa oral prejudicada; (7) dor aguda; (8) hipertermia e (9) risco de sangramento. A mucosite é uma complicação comumente encontrada nos pacientes submetidos ao transplante. Logo, é importante que o enfermeiro desenvolva um olhar clínico apurado, a fim de detectar na sutileza dos sinais e sintomas o risco para o agravamento desta afecção.

Palavras-chave: Mucosite; Transplante de Células-Tronco Hematopoéticas; Diagnóstico de Enfermagem; Processos de Enfermagem.

Introduction

Bone marrow transplantation (BMT), also known as hematopoietic stem cell transplantation (HSCT), is a highly complex procedure that has significantly evolved in the last decades, allowing the treatment of malignant or non-malignant oncohematologic diseases, solid tumors and genetic and metabolic diseases⁽¹⁾. The first HSCT were performed with identical twins stem cells (syngeneic transplantation); currently, other modalities are performed, using donors related or unrelated (allogeneic transplantation) or from the patient himself - autologous⁽¹⁻²⁾.

HSCT offers a potential for cure or disease control, in which other treatment options have failed⁽³⁾. Even transplantation being a life-saving therapy is associated with complications with a morbidity and mortality significant risk⁽¹⁻⁴⁾.

Mucositis is a common complication in patients undergoing HSCT, due to the conditioning regime with high doses of ablative chemotherapy or total body irradiation⁽⁵⁾. It is estimated that 50% to 80% of the patients developed oral mucositis with high severity and marked morbidity⁽⁴⁻⁶⁾.

The main signs and symptoms of this condition are: erythema, swelling, burning sensation, increased sensitivity to hot or acidic foods, and the taste modification. Mucositis can evolve with the formation of painful ulcerations covered by fibrous (pseudomembrane) exudate, whitish or opalescent. These ulcers may be single or extensive, thus compromising every oral cavity and gastrointestinal tract, leading the patient to low or no food intake and consequent dehydration⁽⁷⁻⁸⁾.

The World Health Organization (WHO) classifies mucositis as four levels. Being, score 0 - no mucosa change, level I, erythematous and painful mucosa. Level II is characterized by ulcers, and the patient feeds normally. In level III, the patient has ulcers and can only ingest liquids. And level IV, the patient cannot feed himself, this is the most severe of the symptoms⁽⁷⁾.

Regarding the treatments there is no consensus, the strategies are diversified and seek to attenuate the lesions' pain symptomatology or

to prevent them. Among prophylactic and/or therapeutic agents, the following stand out: cryotherapy, low-power laser, antimicrobials, anti-inflammatories, cytoprotectors, keratinocyte growth factor and local anesthetics⁽⁴⁻⁵⁻⁷⁻⁸⁾.

The mucositis' complications and complexity require the nursing staff to continue training based on the clinical practices' updating of scientific evidence. The Systematization of Nursing Assistance (SNA) assists nurses in decision making, whose focus is on obtaining the expected results⁽⁹⁾.

The nursing diagnosis establishment can contribute to the nursing care improvement, in the sense of directing the conducts in an individualized and specific way for each patient⁽¹⁰⁾. The present article proposes to present a case study, describing the nursing diagnoses of a patient submitted to the transplantation of hematopoietic stem cells that evolved to a severe mucositis.

Method

This is a case study, exploratory, retrospective, that followed the methodological stages delimited by the literature: data collection; selection, analysis and interpretation of the data and case report preparation⁽¹¹⁾. The study was carried out in a bone marrow transplant unit located in the city of Rio de Janeiro. The research was approved by the Ethics Committee in research and followed the ethical precepts of research in humans, according to Resolution No. 466/12 of the National Health Council.

This study focus was the nursing diagnoses related to mucositis, during the 51 days of patient's hospitalization (October to December 2015). The diagnoses were drawn from the patient's medical records and listed in the nursing care management plan routinely performed by the nurses. In 2006, the bone marrow transplantation center implemented the nursing diagnosis step as a necessary step for the development of a nursing care plan from admission to hospital discharge. The North American Nursing Diagnosis Association - NANDA⁽¹²⁾. The case description was made based

on the nurses' experience in this study, since they worked in the case. The collected data analysis allowed the nursing diagnoses elaboration.

Case Report

Male patient, 36 years-old, white, married, incomplete higher education. In 2013, he was diagnosed with Hodgkin's Lymphoma (HL) and initially treated with six cycles of the ABVD protocol (adriamycin, bleomycin, vinblastine, dacarbazine), achieving a complete response. In September 2014, the patient underwent three cycles of the ICE rescue protocol (ifosfamide, carboplatin and etoposide) in the mediastinum, cervical, liver and bone (T10 and costal arch), again reaching a complete response evidenced by negative PET-CT (positron emission tomography - computed tomography). In April 2015, he

relapsed from the disease again, initiating a new rescue protocol with three cycles of the DHAP (dexamethasone, cisplatin, cytarabine). The patient had a partial response to the treatment, and the HSCT was indicated.

On October 27, 2015, the patient was admitted to an autologous HSCT, in which the conditioning regimen was: gemcitabine, busulfan and melfano (GemBuMel). The patient developed severe signs of gastrointestinal toxicity and level IV oral mucositis, presented glottal swelling, obstructive respiratory insufficiency, hemodynamic changes, requiring amines and several antibiotic regimens. Table 1 shows the nursing diagnoses with the corresponding etiology, the problems identified during the patient's hospitalization and the performed nursing interventions.

Table 1. Description of nursing diagnoses and interventions. Rio de Janeiro, RJ, Brazil, 2018.

Nursing Diagnosis ⁽¹²⁾	Problem Presentation	Nursing Interventions
Nausea Subjective phenomena of an unpleasant sensation in the back of the throat and stomach that may or may not result in vomiting.	Nausea after feeding, vomiting, intense drooling, dysphagia, low food intake, oral mucosa with erythema and pain.	Patient oriented to give preference to fast-digesting foods in small amounts; Triggered the nutrition team to evaluate the beginning of cold and fractional liquid diet.
Risk for infection Vulnerability to invasion and multiplication of pathogenic organisms that can compromise health.	Oral mucosa with erythema, lesions and bleeding in the oral cavity, pain, fever, deep venous puncture, thrombosis in subclavian veins and central venous catheter (CVC) fracture.	Oriented patient and companion on hand washing; monitored vital signs; hemoculture in the fever presence; oriented the care with the corporal hygiene and the oral cavity; monitored the catheter site; dressing exchange.
Unbalanced nutrition Minor than bodily needs: insufficient nutrients intake to meet metabolic needs.	Sickness, vomiting, poor diet acceptance, severe drooling, dysphagia, bleeding in the oral cavity, profuse diarrhea and swelling on the face and tongue.	Determined together with multiprofessional team the daily caloric requirements of the patient; performed daily anthropometric measures to estimate weight loss; fractionated diet; stimulated water intake.

Impaired swallowing Abnormal functioning of the swallowing mechanism associated with deficits in oral, pharyngeal or esophageal structure or function.	Intense drooling, dysphagia, low diet acceptance, severe odynophagia, swelling, facial flushing and bleeding in the oral cavity.	The oral cavity was inspected daily, using an instrument to measure the impairment degree of the oral cavity by mucositis.
Diarrhea Elimination of loose and unformed stool.	Abdominal pain and liquid stools in large quantity.	Rigorous water balance; observed and recorded characteristics, volume, frequency and symptoms of gastrointestinal eliminations; monitored caloric and water intake; diuresis and daily weight; examined perianal region daily and patient-oriented for local hygiene care.
Impaired oral mucosa Injury to lips, soft tissues, oral cavity and/or oropharynx.	Oral mucosa with erythema, lesions and bleeding in oral cavity, pain, dysphagia, hyperthermia and swelling on face and tongue.	The oral cavity was inspected daily using the WHO ⁽⁷⁾ scale for measuring the mucositis level; oriented to oral hygiene; daily reassessment of lesions; oriented to keep lips and mucous membranes lubricated.
Acute pain Unpleasant sensory and emotional experience associated with actual or potential tissue injury, or described in terms of such injury; sudden or slow onset, from mild to severe, with an anticipated or predicted end.	Intense odynophagia, lesions and bleeding in the oral cavity.	Monitoring of vital signs; applied visual analogue scale (VAS) for pain assessment. Administered opioids, according to medical prescription.
Hyperthermia State in which the individual presents, or is at risk of presenting, a sustained elevation of body temperature.	Fever, oral mucosa with erythema and lesions in the oral cavity.	Monitoring of vital signs; blood culture collection; administration of antipyretics and antibiotic therapy, according to medical prescription.
Risk of Bleeding Vulnerability to reducing blood volume that can compromise health.	Injuries and bleeding in oral cavity.	Monitoring of vital signs throughout the hospitalization period; daily mucous membrane inspected; advice on oral hygiene care to prevent bleeding and mucosal injury.

Source: survey data.

Discussion

The HSCT toxicity conditioning due to the use of antineoplastic agents in high doses affects

the mucosal cells in division, resulting in oral mucosal ulcers and intestinal denudation⁽⁴⁾. The most frequent complications are oral cavity lesions, due to the high sensitivity of the mucous

membranes to the chemotherapeutic toxic agents effects⁽³⁻⁵⁾.

The results in this study corroborate with data found in the literature, the antineoplastic therapy adverse effects are frequent in the oral cavity, since approximately 50% to 80% of patients undergoing HSCT develop oral mucositis with significant severity and marked morbidity⁽³⁻⁵⁾.

Therefore, the nurse, who is a key player in the execution and systematization of care, should enable skills, abilities and attitudes towards the care of these patients, and it is fundamental to base it on the codified professional literature, such as NANDA, to establish the diagnoses and conduits, to achieve a result that culminates in quality care⁽³⁻⁵⁻¹⁰⁾.

The efficacy and detection of nursing diagnoses in oral mucositis, which define the specific programs⁽³⁻⁵⁾. Thus, measures are necessary to control mucositis, involving mainly the oral hygiene stimulation in the form of brushing or the use of gauze and antiseptic solution. Although there is little consistent evidence of the preventive or therapeutic action of oral hygiene on mucositis, this measure is a consensus because it exerts an effective microbial control, reducing the caries risk and periodontal disease, which predispose the oral tissues to bleeding and infections, which aggravate mucositis⁽³⁻⁵⁻¹⁰⁾.

Some studies⁽³⁻¹⁰⁾ have demonstrated the severe mucositis prevention importance in the course of antineoplastic therapy, emphasizing that, in practice, the limitations imposed by this condition can even lead to treatment restriction. Systematic reviews on the subject point out that low-power laser therapy (LT) is able to prevent the occurrence of oral mucositis level > 3 in patients submitted to high doses of chemotherapy and/or radiotherapy; in individuals submitted to LT, this prophylaxis is about nine times more effective than the absence of this treatment in the controls⁽⁴⁻⁸⁻¹³⁻¹⁵⁾.

Although the Bone Marrow Transplantation Center, in which this study occurred, has a dentistry service with professionals trained in laser radiation, this measure was not applied to the patient during the hospitalization period. This treatment could help

in reducing the pain symptoms and levels of the mucositis involvement in the patient. This reinforces the importance of prevention and communication among the multiprofessional team.

Conclusion

Mucositis is a complication commonly found in patients undergoing transplantation, so it is important that the nurse develops an accurate clinical view to detect in the subtlety of the signs and symptoms the risk for the worsening of this complication. Knowing this condition is fundamental for quality of care. Therefore, the nurse should understand the susceptible patient's profile, the main etiological factors, the preventive and therapeutic behaviors, to prevent and prepare the patient through an individualized approach based on scientific evidence.

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