

Nursing diagnoses identified in onco-hematologic patients: a cross-mapping study

Diagnósticos de enfermagem identificados em pacientes onco-hematológicos: mapeamento cruzado

Diagnósticos de enfermería identificados en pacientes onco-hematológicos: mapeo cruzado

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ABSTRACT

Objective: To compare free terms from nursing records with a standard nursing diagnosis classification. Cross mapping retrospective study of nursing records of 24 medical files of patients hospitalized in an onco-hematological clinic of a university hospital in the state of Rio de Janeiro. 507 matching terms corresponding to 30 nursing diagnoses were found, validated with 194 repetitions in the 24 records, with an average of 8.1 nursing diagnoses per patient. There were predominance of diagnoses of Ineffective Protection, Risk of infection, impaired oral mucosa, Hyperthermia, risk of bleeding, fatigue, acute pain and imbalanced nutrition: less than daily needs. Building clinical protocols from the terms and nursing diagnoses found in this study is recommended, aiming at the systematization of nursing care and onco-hematology patient nursing process.

Keywords: Nursing Diagnosis; Oncologic Nursing; Hematology; Nursing processes; Oncology Hospital Service.

RESUMO

Objetivo: Comparar termos livres dos registros de enfermagem com uma classificação de diagnósticos de enfermagem. Estudo de mapeamento cruzado, retrospectivo, dos registros de Enfermagem de 24 prontuários de pacientes hospitalizados numa clínica onco-hematológica de um hospital universitário do estado do Rio de Janeiro. Encontraram-se 507 termos correspondentes aos 30 Diagnósticos de Enfermagem, validados com frequência de 194 repetições entre os 24 prontuários, com uma média de 8,1 Diagnósticos de Enfermagem por paciente. Houve predomínio dos diagnósticos de Proteção ineficaz, Risco de infecção, Mucosa oral prejudicada, Hipertermia, Risco de sangramento, Fadiga, Dor aguda e Nutrição desequilibrada: menos do que as necessidades diárias. Recomenda-se a construção de protocolos clínicos a partir dos termos e dos Diagnósticos de Enfermagem encontrados neste estudo, visando à sistematização da assistência de enfermagem e do processo de enfermagem ao cliente onco-hematológico.

Palavras-chave: Diagnóstico de Enfermagem; Enfermagem Oncológica; Hematologia; Processos de Enfermagem; Serviço Hospitalar de Oncologia.

RESUMEN

Objetivo: Comparar términos libres de registros en enfermería con una clasificación de Diagnósticos de Enfermería. Se realizó un mapeo cruzado, retrospectivo, de los registros de Enfermería de 24 expedientes de pacientes hospitalizados en una clínica onco-hematológica de un Hospital Universitario en el Estado de Rio de Janeiro, Brasil. Fueron encontrados 507 términos correspondientes a los 30 Diagnósticos de Enfermería, validados con frecuencia de 194 repeticiones entre los 24 expedientes, un promedio de 8,1 Diagnósticos de Enfermería por paciente. Los diagnósticos más prevalentes fueron: protección ineficaz; riesgo de infección; mucosa oral deteriorada, hipertermia, riesgo de desangramiento; fatiga; dolor agudo; y nutrición alterada (inferior a las necesidades diarias). Se recomienda la construcción de protocolos de atención clínica de los Diagnósticos de Enfermería de prioridad que se encuentran en ese estudio. De este modo, se espera contribuir con la implementación de la sistematización de la asistencia de enfermería y del proceso de enfermería al cliente onco-hematológico.

Palabras-clave: Diagnóstico de Enfermería; Enfermería Oncológica; Hematología; Procesos de enfermería; Servicio de Oncología en Hospital.

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INTRODUCTION

Estimates of cancer incidence in Brazil, in 2012, reported that the onco-hematological diseases - especially the leukemias, which include acute myeloid, chronic myeloid, acute lymphoblastic and chronic lymphocytic leukemia, had rates of 4,570 new cases of disease in men and 3,940 in women. These values correspond to an estimated risk of five new cases per 100,000 men and four per 100,000 women¹.

A common trait in onco-hematological diseases is the occurrence of hospitalization, whether by low immunity and the systemic, or due to chemotherapy. Normally, the hematologic changes expose patients to complications such as infection, pain, lesions of the oral mucosa, fatigue and malnutrition, which can worsen their clinical condition and interfere with their recovery².

Of hematological changes commonly found, there is anemia, which predisposes the patient to fatigue, pallor, dyspnea and tachycardia, in addition to thrombocytopenia, which causes bleeding (especially when the platelet count is $\leq 20,000/\text{mm}^3$, increasing the risk of gastrointestinal and brain) hemorrhage. Neutropenia reduces leukocyte counts below $1500/\text{mm}^3$ and exposes the patient to risk of infection, being equal to or lower than $1,000/\text{mm}^3$ considered respectively as moderate and severe neutropenia³.

Therefore, it is important that nurses know these characteristics and identify them as the clinical focus of their attention, and evaluate the answers of the subjects experiencing this situation. The implementation of the Nursing Care System (NCS) with adequate human resources in Nursing, changes in health care models, investment in training with theoretical models for the system implementation, and the commitment and support of the professionals, arises in this scenario as a challenge⁴.

The definition of terms and the most common diagnostics in onco-hematological clinical practice is an important contribution to the implementation of the NCS. It is made possible with the direct attention to the patient by performing the five methodological steps of the nursing care process, namely: research, diagnosis, planning, implementation and assessment⁵.

However, one of the difficulties associated with the implementation of the nursing process are precisely the inadequate forms for registration⁶. One way to approximate the nursing practice with existing ratings is the cross-mapping, i.e., valuing the terms used in practice for construction of forms, adopting standardized languages.

Studies conducted in 1997 mapped the nursing non-standardized interventions contained in internal data of hospitals, giving rise to the known Nursing Intervention Classification (NIC)⁷. Also, in 2004, the authors of a US study created a structural model of the information used in each step of the nursing process and mapped it in order to develop the standards in healthcare.

A review study examined the use of cross-mapping in nursing research demonstrating the relationship between the classification systems, the use of computers and the health services. Of the 26 studies analyzed in this review, three were related to oncology: a German, made in 2006, in which the authors' objective is to present the construction of a subsystem under the International Classification for Nursing Practice (ICNP[®]) for oncology patients; a Norwegian study, also conducted in 2006, in which the authors extracted terms used to indicate the signs and symptoms of 25 records of patients from oncology, mapping those to this medical area; and another one aiming to the development of a catalog of diagnoses, nursing interventions and outcomes for patients with multiple myeloma⁷.

The cross mapping was also used to trace the phenomena identified in nursing visits of a family planning service, from the perspective of ICNP[®]; in another one, for Nursing Diagnoses (ND) in the elderly, according to Life Model and ICNP[®]; and in another, it established a database of Language Special Terms for Nursing Neonatal Intensive Care Unit, according to INCP[®]. cross-mapping was also used to construct an instrument for Diagnostic Imaging Centers, so that the identified activities were mapped according to the Nursing Interventions Classification (NIC). An instrument for performing physical examination in adults and elderly was also proposed, according to the literature review and the ICNP[®]. There are also authors who proposed to introduce and describe the method of cross mapping⁷.

However, only a small number of publications that used the ND in haematological field was observed, especially as regards the onco-hematology area, evidencing the need for studies with this classification and subject.

Identifying actual and potential diagnoses onco-hematology patients may face increases the possibility of preparing more reliable nursing care to the clinical needs reported by patients and thus achieve the nursing results, providing wellbeing to the patients.

Under these considerations, the present study aimed to compare terms from free nursing records and ND classification registers.

METHOD

This study used cross-mapping, based on the comparison of terms used in daily service and the existing classification systems, providing the adjustment required for its practical implementation⁸. This was therefore a documentary retrospective study, on the nursing registers into medical records of patients hospitalized in onco-hematology clinic of a university hospital in the state of Rio de Janeiro.

The selection criteria were: medical records of patients diagnosed with acute or chronic myeloid and lymphoid leukemia and their subclassification, hospitalized from January 1st to December 31st 2011, available at the Medical

Archive and Statistics Department from the Documentation Service of the hospital. In readmissions, only the nursing records of this new period were analyzed. Exclusion criteria were: medical records that were unavailable due to internal hospital routines such as scanning and/or billing; and patients with other medical diagnoses which did not meet the object of research.

First, we searched in the admission and discharge Main Logbook, which is filed in the Medical Archive and Statistics Department from the Documentation Service, information about the identification of hospitalized patients with a diagnosis of leukemia and lymphoma and their sub-classifications in hematology clinic between January 1st and December 31st, 2011. After the selection of patients, the survey of records was scheduled in accordance with the availability of the Medical Documentation Service of the institution.

Of the 116 hospitalizations in the Hematology Department, 89 records were not part of the research for not presenting the declared medical diagnoses or presenting insufficient nursing service reports, preventing a deeper analysis. Thus, the sample consisted of the records of 27 patients, representing 23.3% of the population, making it possible to estimate the percentage of nursing diagnoses. However, of these 27 records, three were not available for study, as they were in digitization process and outpatient billing. So only 24 patient records with myeloid and acute or chronic lymphoid leukemia were part of the study.

Later, we started the research on the records previously scheduled, by the application of the data collection instrument. The consultation ranged from five to eight records, with an average duration of nine hours per day of research.

For collecting and analyzing data, we elaborated a script containing: (1) identification data of the patient; (2) a free description and transcript of nursing problems identified in the nursing records during hospitalization of the patients with leukemia in hematology department; (3) a comparison of the terms, in exact or partial way, with the standard classification; (4) an evaluation by experts, with full or partial agreement.

As a strategy to facilitate the search for terms, followed by a chronological and sequential analysis of records, i.e., from the time of admission until discharge or death, to obtain the largest amount of information that contribute to the inference of the ND.

Then we conducted the development of a ND from the terms of records (defining characteristics) highlighted by the researcher to describe the diagnoses. Subsequently, these were compared with the defining characteristics of the Nursing Diagnoses Classification NANDA-I.

Risk and other related factors were identified through interpretation of related terms, synonyms or similar concepts that somehow translate the hemodynamic changes caused by the base disease, thus influencing the search and increasing the partial combinations.

So we performed an analysis of combination, adapted so that if the term found matched exactly with the end of the classification system, the combination would be designated as exact; However, if the terms were synonymous, or using similar or related concepts, the combination would be designated as partial. Also, the terms presenting no resemblance to the classification system and with no possible combination would not be extracted from the records.

Fourth step corresponded to the analysis performed by three expert nurses (one specifically in nursing diagnosis and the other two in oncology), two of them being nursing PhD and active in medical-surgical clinic. The form filled out by the researcher was referred to the three specialist nurses in relation to excellent, substantial, moderate and low compliance with the defining characteristics/risk or related factors for each of the 164 diagnoses found.

Experts were contacted by the researcher by invitation letter sent via electronic mail providing information about the purpose of the study, the adopted methods and the willingness/availability to participate in research. Those who agreed to participate as diagnosticians signed the Informed Consent Form (ICF).

To analyze the data collected, we created a spreadsheet in Excel[®] for Windows software, with a descriptive analysis of frequency distributions. To assess the degree of agreement between the researcher and the experts, we decided by the Kappa index, analyzed using the *Statistical Package for the Social Science* (SPSS) software, version 13.0. The Kappa index was defined as a measure of association to describe and test the degree of agreement, i.e., the reliability and accuracy of an assessment⁸. Kappa values > 0.7 are considered as a good level of agreement⁸. For ND creation purposes, only nursing data that had substantial and excellent agreement were included.

Formal authorization for use of medical records was requested to the participants, who were informed of the objective of the study. After agreeing to participate, they signed the Informed Consent Form (ICF). The project was approved by the Research Ethics Committee of the University Hospital Antonio Pedro, under protocol 144.119, fulfilling the recommendations of Resolution 466/2012 of the National Council of Health of Ministry of Health, which regulates research involving human subjects.

RESULTS

Most records were of male patients (16; 66.7%), with ages ranging from 26-83 years and an average age of 44.2. About marital status, 13 patients were single, seven were married, two were separated and two were widows. 12 patients informed having children, six patients reported having no child and six did not provide information. With regard to education, 13 records did not contain this information; of the others, four indicated incomplete primary education, two indicated complete

primary education, two informed incomplete high school, two completed high school and two reported incomplete higher education.

There were some difficulties to determine patients' occupation in data from medical records, as nine had no information on it; two patients were mechanics and two were housewives; store manager, computer technician, assistant props, mason, caregiver, retired, industrial yard, student, operator of construction machinery and mining, automotive electrician, school inspector were occupations cited by one patient each. In relation to medical diagnosis, most (13; 54%) had acute myeloid leukemia; Six (25%) acute lymphocytic leukemia; one (4.2%) reported chronic myeloid leukemia; one had T-cell leukemia lymphoma; one had hairy cell leukemia; and one reported a non-specified leukemia.

On laboratory tests, 21 (87.5%) patients had anemia, with hemoglobin (Hb) less than expected for both men (Hb = 14 to 18g/dL) and women (Hb = 12 to 14g/dL). Values ranged from 5.3 to 11.8g/dL in women and from 5.5 to 13.5g/dL in men. With respect to hematocrit (Ht), 22 (91.6%) patients were below the values considered normal for men (Ht = 40-52%) or women (36-48%). Regarding neutrophils, 12 (50%) had values below normal rates (2500-7500/mm³). Analyzing the platelet counts, taking as reference values from 140,000 to 400,000/mm³, we found that 18 (75%) presented plaquetopenia³.

With regard to hospitalization time, it was observed that the minimum duration ranged from 1 to 76 days of hospitalization, with a median of 20.4 days. About the therapeutic treatment used by hospitalized patients with leukemia, 18 (75%) carried chemotherapy and blood therapy as the base treatment for the malignancy. Of these, only one (4.2%) underwent bone marrow transplantation with improvement of clinical condition and discharge for outpatient follow-up. Other three (12.5%) patients used only hemotherapy as therapeutic treatment.

Table 1 presents the key terms found in medical records which are considered clinical indicators, i.e. risk and other related factors and defining characteristics of the presence of ND in the population studied.

In Table 2, there are the ND identified in hospitalized onco-hematological patients, according to NANDA-I classification, grouped according to domains, in the first column. Second and third columns present the concordance ratings of the three experts in absolute numbers of 194 occurrences of 30 diagnoses, i.e. a total 582 of reviews. Of these, 462 showed excellent and 114 a substantial agreement; the six others were discarded. The total number of diagnoses and their percentage with respect to the prevalence of diagnoses are properly presented. In other words, a nursing diagnosis representing 100% of the sample means that the referred diagnosis has been identified in all patients.

Noteworthy is the presence of 194 NDs in 24 onco-hematological patients hospitalized, with an average of 8.1 per patient,

thus assuming the high demand for skilled and comprehensive nursing care.

As for the agreement of evaluators, moderate agreement was obtained from the Cohen's Kappa ($k = 0.330$; $p = 0.094$), which was significant only at the 10% level. However, when setting the value of Kappa for prevalence, we obtained high and statistically significant agreement at 1% ($k = 0.902$; $p < 0.001$).

DISCUSSION

The key terms found in the records of nurses in the medical records were referring to: hospitalization, patient's hematologic conditions (hemoglobin, neutrophils, platelets), therapeutic treatments performed, venous access conditions, body temperature, bowel eliminations, type and location of pain, diet acceptance, nausea and vomiting, and anxiety. These terms provided subsidies for validation by the ND experts.

We observed a predominance of diagnoses of ineffective protection, risk of infection, impaired oral mucosa, hyperthermia, risk of bleeding, fatigue, acute pain and imbalanced nutrition: less than daily needs. Such diagnoses showed moderate agreement among experts.

Study emphasized that the exposure of onco-hematologic patients is proportional to the number of days of hospitalization, because during hospitalization, in addition to the underlying disease, the patients are subjected to invasive procedures and chemotherapy itself, which compromises their immune system exposing them to infections and, consequently, leading to longer hospitalization.

The risk of infection was associated with increased environmental exposure to pathogens, immunosuppression, invasive procedures, inadequate primary (broken skin) and secondary defenses (decreased hemoglobin and leukopenia) and medicine (immunosuppressive).

Patients with leukemia, when hospitalized, are exposed to pathogenic microorganisms due to the hospital environment, base disease itself, or the therapeutic treatment required for their recovery, which includes the use of an intravenous access for administration of immunosuppressive drugs prescribed.

Approximately 80% of patients with chronic lymphocytic leukemia have infectious complications at some point during the course of disease⁹. Infections were the main complications and secondary cause of death in treatment of leukemia¹⁰, demonstrating the importance of considering the Ineffective Protection and Infection Risk in the implementation and documentation of the nursing process.

In our sample cases, mortality rate was high (66.7%), and sepsis or septic shock (37.5%) the leading cause of death. Two (8.3%) deaths were due to infection with *aspergillus sp.*, which can occur by neutropenia caused by prolonged therapy and concomitant corticosteroids or prolonged broad spectrum antibiotic treatment⁹.

Table 1. Terms found in the medical records of patients hospitalized with leukemia. Niterói, 2012

Terms/domains diagnosis %		
Security/Protection		
Hospitalization		23 95.8
Peripheral venous access		22 91.6
Hemoglobin (5.5g/dL, 10.8g/dL)		21 87.5
Chemotherapy		18 75
Neutrophils (0.000/mm ³ -1,220/mm ³)	Risk of infection	11 45.8
Deep venous access		4 16.6
Bone marrow biopsy		3 12.5
Catheter and probe		2 8.3
Platelets (5 x 83 x 10 ³ mm ³ -10 ³ mm ³)		16 66.6
Hemoglobin (5.3g/dL, 10.8g/dL)		15 62.5
Chemotherapy		14 58.3
Neutrophils (0.000/mm ³ -0.800/mm ³)		9 37.5
Pale (+3/+4)		9 37.5
Coated tongue	Impaired oral mucous	7 29.1
Mucositis		6 25
Bleeding gums (Gingivitis)		5 20,8
Odynophagia		2 8.3
Dehydrated (+2/+4)		2 8.3
High body temperature (37.8° C-39.6° C)	Hyperthermia	15 62.5
Medicines		4 16.6
Emaciate		2 8.3
Hemoglobin (5.3g/dL, 6.4g/dL)		2 8.3
Platelets (5 x 20 x 10 ³ mm ³ -10 ³ mm ³)		2 8.3
High body temperature (37.6° C-39.6° C)	Risk of impaired skin integrity	2 8.3
Pallor (+3/+4)		2 8.3
Neutrophils (0.700)		1 4.16
Skin turgor and elasticity decreased		1 4.16
Hypo-hydrated skin		1 4.16
Bedridden		2 8.3
Chemotherapy		1 4.16
Decreased turgor		1 4.16
Deep venous access	Impaired skin integrity	1 4.16
Lesion in the right lower limb		1 4.16
Pressure ulcers		1 4.16
Absence of some teeth		3 12.5
Poor oral hygiene	Impaired dentition	1 4.16
Teeth (in disrepair)		1 4.16

Continuation...

Terms/domains diagnosis %			
Syncope with fall		3	12.5
Hemoglobin (6.2g/dL, 7.9g/dL)	Risk of falling	2	8.3
Medications (furosemide and captopril)		2	8.3
Cough		1	4.16
Tachypnea (24-44 breaths per minute)	Ineffective airway clearance	1	4.16
Scattered crackles in both lungs		1	4.16
Reports the suicidal tendency to nurses	Suicide risk	1	4.16
Perception/cognition			
Confused		1	4.16
Agitated	Acute Confusion	1	4.16
Periods of disorientation		1	4.16
Does not perceive hospitalization reason	Impaired knowledge	1	4.16
Elimination/protection			
Absent evacuation for at least three days		8	33.3
Bedridden		5	20.8
Medications: Rivotril, Tramal, Lasix, Morphine		4	16.6
Little appetite for dietary compliance	Constipation	4	16.6
Nausea and vomiting		3	12.5
Rectal bleeding after a bowel movement		2	8.3
Rectal Pain (hemorrhoids)		1	4.16
Distended abdomen with decreased bowel sounds		1	4.16
Bedridden		1	4.16
Rectal sensitivity with difficult of evacuation	Constipation risk	1	4.16
Pain in the perianal region		1	4.16
10 hours without urinating	Urinary retention	1	4.16
Activity/rest			
Platelets (4 x 69 x 10 ³ mm ³ -10 ³ mm ³)		15	62.5
Petechiae		5	20.8
Oral bleeding		3	12.5
Nosebleed		3	12.5
Hematoma		2	8.3
Palatal ecchymosis	Risk of bleeding	1	4.16
Melena		1	4.16
Continuous epistaxis		1	4.16
Enterorrhagia		1	4.16
Metrorrhagia		1	4.16
Hematemesis		1	4.16
Hemorrhage in the left eye sclera		1	4.16

Continuation...

Terms/domains diagnosis %			
Hemoglobin (5.3g/dL, 9.6g/dL)		11	45.83
Fatigue and dyspnea upon exertion		9	37.5
Emaciate		5	20.8
Eager	Fatigue	5	20.8
Weakness and malaise		3	12.5
Multiples complaints		1	4.16
Depressed		1	4.16
Bedridden		1	4.16
Moves up wheelchair	Impaired physical mobility	1	4.16
On bed rest for deep vein thrombosis		1	4.16
Emaciate		1	4.16
Prostrate, necessitating changing positions	Impaired Mobility in bed	1	4.16
Bedridden, bed bath held		1	4.16
Assistance with ambulation due to edema in right foot	Impaired ambulation	1	4.16
Lesion in right foot with devitalized tissue		1	4.16
Reports unsatisfactory night sleep due to oral pain	Pattern of sleep disturbance	1	4.16
Health Promotion			
Leukemias		24	100
Hemoglobin (5.5g/dL-11.8g/dL)		21	87.5
Chemotherapy	Ineffective protection	18	75
Platelets (5 x 83 x 10 ³ mm ³ -10 ³ mm ³)		11	45.8
Neutrophils (0.000/mm ³ -0.800/mm ³)		11	45.8
Depressed mood		1	4.16
Refused to make hygienic	Self-neglect	1	4.16
Scabious		1	4.16
Comfort			
Leukemia		15	62.5
Pain in upper and lower limbs		7	29.1
Abdominal pain		6	25
Intense pain in the lower back and posterior chest		4	16.6
Pain in the dorsal region	Acute pain	2	8.3
Painful swallowing		2	8.3
Generalized myalgia		2	8.3
Rectal pain during evacuation		1	4.16
Bone pain in the thoracolumbar region		1	4.16
Pain at the site of venipuncture		1	4.16
Chemotherapy		8	33.3
Refers anorexia and nausea	Nausea	8	33.3
Vomit		3	12.5

Continuation...

Terms/domains diagnosis %			
Widespread pain (more than 6 months)		1	4.16
Pain "twinge" in his left calf with phlogosis, erythema, pain, local redness (over 6 months)	Chronic Pain	1	4.16
Pain in the left inguinal region and left lower limb during ambulation (over 6 months)		1	4.16
Nutrition			
Leukemia		16	66.6
Accepting diet partially		14	58.3
Mucositis	Imbalanced nutrition: less than daily needs	3	12.5
Loss of appetite		2	8.3
Fatigue and dyspnea upon exertion (tumor that prevents him from food and drinking water)		1	4.16
Odynophagia		1	4.16
Coping/tolerance to stress			
Anxious/concerned with the diagnosis		5	20.8
Hospitalization	Anxiety	1	4.16
Tachycardia (> 124 beats per minute)		1	4.16
Left hospital without proper discharge	Behavior prone to health risk	1	4.16
Reports feeling homesick, pets, showing sad and tearful, prolonged treatment	Chronic sorrow	1	4.16
Life principles			
Refused to receive haemotransfusion for religious reasons	Noncompliance	1	4.16
Total		507	-

Considering that the immunity system of patients with chronic lymphocytic leukemia presents various defective aspects and multiple disorders often coexist in the same patient, the humoral immunodeficiency has been considered the primary defect in leukemia. However, it is increasingly recognized that defects in T cells and natural killer (NK) cells, as well as neutrophil dysfunction and defects in complement system significantly contributes to the immunodeficiency state and, therefore, should be screened⁹.

Neutropenia, the humoral and cellular dysfunction, the hypogammaglobulinemia, as well as the damage to oral mucosa predispose patients to infection. The diagnosis of impaired oral mucosa was observed commonly in patients. It is characterized by difficulties to swallow, mouth sores, bleeding, gingival hyperplasia, mucosal pallor, oral discomfort, difficulty to speak and to eat, oral pain, coated tongue and halitosis.

Mucositis is an inflammation of the oral mucosa dose-dependent of several chemotherapeutic agents, and is characterized as the most common side effect of chemotherapy reaching up to 40% of patients on anticancer

treatment¹¹. The pain caused by mucositis is so intense that it can interfere in patients' nutrition and often leads to the need of analgesics, and the interruption of the treatment protocol. Moreover, it can still be a gateway to local and systemic secondary infections, which may even cause patients to die¹¹. This is because cancer chemotherapy acts on cells which are in mitosis, both neoplastic and healthy cells. Thus, since the cells of the oral mucosa are in a constant process of mitosis, they are also affected, creating the lesions known as oral mucositis, causing pain and oral discomfort, difficulty to speak and eat, and even to perform oral hygiene, generating consequently coated tongue and halitosis. And as the mucosa is injured, this settles an opening for the invasion of pathogens, increasing even more the risk of infection. Thus, there is the importance of nurses in early identification of oral lesions as well as in the prevention of opportunistic infections, since this professional is the one responsible for oral hygiene and maintaining its integrity.

Prevalence of hyperthermia diagnosed in these patients was detected by at least one temperature measuring $\geq 38^\circ \text{C}$. Associated with chemotherapy, febrile neutropenia exists when

Table 2. Nursing diagnoses found in patients hospitalized with leukemia. Niterói, 2012

Diagnostic/domain	Expert's evaluation		Total	
	Excellent Agreement (n)	Substantial Agreement (n)	n	%
Safety/protection				
Ineffective protection	70	2	24	100
Infection risk	58	11	23	95.8
Impaired oral mucous	39	18	19	79.2
Hyperthermia	42	3	15	62.5
Risk for impaired skin integrity	11	1	4	16.7
Impaired skin integrity	7	2	3	12.5
Impaired dentition	6	3	3	12.5
Risk of falls	3	0	1	4.2
Ineffective airway clearance	2	1	1	4.2
Suicide risk	3	0	1	4.2
Perception/cognition				
Acute confusion	1	2	1	4.2
Impaired knowledge	0	2	1	4.2
Elimination/protection				
Constipation	14	10	8	33.3
Constipation risk	2	1	1	4.2
Urinary retention	2	1	1	4.2
Activity/rest				
Bleeding risk	48	0	16	66.7
Fatigue	31	2	11	45.8
Impaired physical mobility	5	1	2	8.3
Impaired mobility in bed	3	0	1	4.2
Impaired ambulation	3	0	1	4.2
Pattern of sleep disturbance	3	0	1	4.2
Health Promotion				
Self-neglect	2	1	1	4.2
Comfort				
Acute pain	31	14	15	62.5
Nausea	22	2	8	33.3
Chronic pain	0	3	1	4.2
Nutrition				
Imbalanced nutrition: less than daily needs	30	24	18	75
Coping/tolerance to stress				
Anxiety	19	6	10	41.7
Behavior prone to health risk	2	1	1	4.2

Continuation...

Diagnostic/domain	Expert's evaluation		Total	
	Excellent Agreement (n)	Substantial Agreement (n)	n	%
Chronic sorrow	0	3	1	4.2
Life principles				
Noncompliance	3	0	1	4.2
Total	462	114	194	

a patient presents neutrophil count < 1.0 (x10⁹/L) and has a temperature ≥ 38° C; Furthermore, if the patient is systemically unwell, there is the clinical suspicion of sepsis¹².

In this study, ten patients showed neutrophil count < 1,0x10⁹/L. When patients with febrile neutropenia receive the first medical care in emergency, they're apparently stable; however, febrile neutropenia is a medical emergency and requires immediate attention because clinical deterioration occurs within days or even hours¹³. We observe here the importance of nursing in the early identification of risk factors, signs and symptoms of hyperthermia, and in the monitoring of the leukocyte count in order to analyze the presence of FN and contribute to the reduction of complications arising from it and consequently any infection and death due to sepsis.

The risk of bleeding was related to the inherent coagulopathy (thrombocytopenia). That's because these patients, besides having a drop in the number of platelets, also manifested the symptoms resulting from this reduction, such as the petechiae, bleeding gums, bruising, melena, epistaxis, intestinal bleeding, bleeding in the sclera, hematemesis and hematoma.

The incidence and severity of thrombocytopenia in patients with leukemia vary depending on the type and stage of the disease. It can be developed due to the use of chemotherapy or by the accumulation of abnormal blast cells in the bone marrow. Thrombocytopenia is one of the interveners to the quality of life of onco-hematology patients¹⁴, and this clinical manifestation should, therefore, be a focus of nursing intervention.

The diagnosis of fatigue was explained in part by the myelosuppression caused by disease, by the treatment that reduces the levels of hemoglobin and so by the decreased blood oxygen rates, generating tissue hypoxia. In order to reduce the demand for oxygen, the patient stays a longer time in bed, prostrate and listless, with reduced mobility which leads to weakness, and as its complications, muscle atrophy and/or pressure ulcers, which may compromise recovery and worsen the clinical state.

Unlike other patients, people with cancer have no reduction in their fatigue after their rest, which makes this symptom more striking than the pain, depression and nausea¹⁵. If not properly identified, the fatigue can weaken the

cancer patient, interfere with treatment and harm the quality of life¹⁶. These patients often feel discouraged and fail to perform their activities of daily living, isolating themselves socially because their physical conditions do not contribute to the continuity in social life, and there's also the distance from their work environment - hence the importance of its detection and intervention by the nurses.

Fatigue diagnosis, however, is particularly complex to achieve as it requires from the nursing professional accurate knowledge and observation to identify its defining characteristics, since it is determined from a subjective judgment. Therefore it is important to include the terms of the investigation of fatigue diagnosis in onco-hematology nursing care protocols.

Acute pain identified from the verbal reports of patients is also a diagnosis commonly observed in cancer patients - particularly the onco-hematology patient, due to the infiltration of leukemic cells in the bone marrow, liver and spleen. Cancer pain has characteristics of both acute and chronic pain. As well as acute pain, cancer pain is directly associated with tissue injury. When this pain persists or worsens, it can serve as a sign of disease progression and create a sense of hopelessness, as patients believe it is not worth continuing to live this way, losing the meaning of life¹⁷.

Thus, we observe that the pain, whatever its intensity, is a problem to clinical recovery, deserving special attention by the nursing staff, especially the nurses in charge of its management and control, providing comfort and well-being.

The unbalanced nutrition was identified by reports on inadequate, less than the daily recommended food intake; wound oral cavity; lack of interest in food and pale mucous membranes. Its importance is associated with the implications of worsening in other NDs, including the perception of well-being of the patient.

Any food ingested by the onco-hematology patients must first be boiled and cooked including the fruit, which, in turn, contributes to the loss of appetite and lack of interest in food. Therefore, it is essential that the nursing staff, as a whole, is engaged in stimulating the oral intake of food and fluids, and instruct the patients about the importance of this preparation and the need of good nutrition to their recovery.

The diagnoses of dealing coping and stress tolerance are of the same relevance. Its low incidence may occur due to the severity and prioritization of nursing care, but also by the absence of a nursing theory or language that covers the whole field of care provision to the human being.

Anxiety is a warning sign that calls attention to an impending danger and enables the individual to take measures to deal with the threat. Thus, evaluation and implementation of interventions for individual, family and collective coping with the treatment and maintenance of the principles of life must be valued. These are goals of onco-hematology nursing care, which seeks to preserve the spirituality and feelings of regret, given the high incidence of care measures required at the end of life.

Finally, nursing has a key role in caring for the person with leukemia, in proper data collection, and also in identification of diagnoses and its recording. This fact, when looked closely, is a first step towards the establishment of goals and care demands, i.e., the planning of interventions, as well as their assessment as to their resolution, by clinical recovery and/or reduction of NDs at the end of hospitalization.

CONCLUSION

From the mapping of the terms found in the medical records of onco-hematological patients compared with the standard classification, 30 NDs were identified, distributed in nine domains of nursing care. According to the validation by experts, the following NDs had excellent agreement rates and deserve special attention: Ineffective protection, risk of infection, risk of bleeding, impaired oral mucosa, acute pain, Imbalanced nutrition: less than daily needs, Anxiety.

Such diagnoses are linked to the state of immunosuppression caused by the disease and its treatment. The haematological triad of anemia, neutropenia and thrombocytopenia, present in these leukemic patients, contributes to the identification of most of the defining characteristics found.

As a limitation of the research, we found difficulties to conduct a search in the records, such as lack of information about the patient's education, professional occupation, family composition and living conditions and income, as well as subjective information. The record of the clinical manifestations by the nursing staff was insufficient. We identified that the same symptoms were recorded by the team in different ways, with no standardized information on the clinical evolution of the patient.

Therefore, it is recommended the construction of clinical care protocols from the terms and priority NDs found in these studies. The standardized records of nursing care will allow not only to focus on the needs of onco-hematological patients, but also to evaluate the clinical outcome and recovery of their health status and well-being.

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