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Pressure injuries in adults with multi resistant germs: a cohort study

Lesões por pressão em adultos portadores de germes multirresistentes: um estudo de coorte

Lesiones por presión en adultos con gérmenes multiresistentes: un estudio de cohorte

RESUMO

Objetivo: Descrever o desfecho das lesões por pressão em adultos portadores de germes multirresistentes. Método: Estudo de coorte, realizado com pacientes hospitalizados em um hospital público do sul do Brasil. A amostra foi de 110 lesões a partir do estágio 2, com coleta de dados através do Bates-Jensen Wound Assessment Tool – BWAT, do Pressure Ulcer Scale for Healing (PUSH) e da Nursing Outcomes Classification (NOC). A análise estatística foi descritiva e analítica. Resultados: A idade média foi $45,4 \pm 21,3$ anos e 63,8% com mais de uma lesão. Eram 26,4% de estágio 2, 31,9% na região sacra, com mediana de 14 cm². Houve redução significativa das lesões a partir da 6ª avaliação, após 35 dias de internação, nos três instrumentos ($p < 0,001$). Conclusão: Este estudo demonstrou boa evolução nas lesões por pressão dos pacientes portadores de germes multirresistentes, reforçando a importância do cuidado de enfermagem estruturado através de protocolo assistencial.

DESCRIPTORES: Úlcera por pressão; Cuidados de enfermagem; Resistência bacteriana a antibióticos.

ABSTRACT

Objective: To describe the outcome of pressure injuries in adults with multiresistant germs. Method: Cohort study, carried out with patients hospitalized in a public hospital in southern Brazil. The sample consisted of 110 injuries from stage 2, with data collection through the Bates-Jensen Wound Assessment Tool – BWAT, the Pressure Ulcer Scale for Healing (PUSH) and the Nursing Outcomes Classification (NOC). Statistical analysis was descriptive and analytical. Results: The mean age was 45.4 ± 21.3 years and 63.8% had more than one lesion. There were 26.4% of stage 2, 31.9% in the sacral region, with a median of 14 cm². There was a significant reduction in injuries from the 6th assessment, after 35 days of hospitalization, in the three instruments ($p < 0.001$). Conclusion: This study showed good evolution in pressure injuries in patients with multiresistant germs, reinforcing the importance of structured nursing care through a care protocol.

DESCRIPTORS: Pressure ulcer; Nursing care; Drug resistance bacterial; Standardized nursing terminology.

RESUMEN

Objetivo: Describir el resultado de las lesiones por presión en adultos con gérmenes multirresistentes. Método: estudio de cohorte, realizado con pacientes hospitalizados en un hospital público del sur de Brasil. La muestra consistió en 110 lesiones de la etapa 2, con recolección de datos a través de la herramienta de evaluación de heridas de Bates-Jensen – BWAT, la escala de cicatrización de úlceras por presión (PUSH) y la clasificación de resultados de enfermería (NOC). El análisis estadístico fue descriptivo y analítico. Resultados: La edad media fue de $45,4 \pm 21,3$ años y el 63,8% presentaba más de una lesión. Hubo 26,4% de estadio 2, 31,9% en la región sacra, con una mediana de 14 cm². Hubo una reducción significativa de lesiones a partir de la sexta evaluación, después de 35 días de hospitalización, en los tres instrumentos ($p < 0,001$). Conclusión: Este estudio mostró una buena evolución en las lesiones por presión en pacientes con gérmenes multirresistentes, lo que refuerza la importancia del cuidado de enfermería estructurado a través de un protocolo de atención.

DESCRIPTORES: Úlcera por presión; Atención de Enfermería; Farmacorresistencia Bacteriana

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INTRODUCTION

The chronicity of the diseases and the need for multiple treatments increased the occurrence of bacterial resistance. Patients with multi resistant germs (MRG) are at high risk of involvement by pressure injury (PI) because they have a higher level of dependence for care, in addition to having a higher risk of PI infected with MRG, due to skin colonization, with unfavorable outcomes such as delayed healing, interruption of the healing process, sepsis and death. In addition to the harm caused to the patient, studies point to a significant increase in hospital costs. (1-4).

PI is characterized by damage to the skin and/or underlying structures, usually bony prominences, caused by pressure alone or combined with shear and/or friction and are classified according to the degree of damage observed in the tissues. (5) Its incidence is between 4 and 16% in patients hospitalized in developed countries, with a greater number in the Intensive Care Units (ICU), which can vary between 11,1% and 64,3% in other places of hospitalization. Both the occurrence and the healing of PI are processes directly related to the patient's health conditions and investment in prevention in health institutions. (6,7)

The nursing team has a fundamental

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PI is characterized by damage to the skin and/or underlying structures, usually bony prominences, caused by pressure alone or combined with shear and/or friction and are classified according to the degree of damage observed in the tissues. role in the prevention and treatment of PI, supported by care protocols in health institutions. The nurse is the professional with knowledge and competence to assess the PI risk, assess the skin and present lesions, and prescribe preventive measures or for individualized treatment, in addition to guiding and supervising the nursing staff in caring for this individual. (8,9)

In addition to the predictive risk scales, it is necessary to observe the PIs, when they are already developed. The assessment and monitoring of PI through instruments can support the nursing team for decision-making in relation to the treatment, as well as measure the effect of interventions performed, standardizing the language with nomenclature based on scientific evidence. (10)

Classification systems qualify the nursing process, supporting clinical reasoning and enabling better care practices, optimizing communication, recording and care management, by maintaining a standardized language. In this way, the assessment instruments can support the elaboration

of an individualized care plan, guiding the interventions to be carried out. (11)

Classification systems qualify the nursing process, supporting clinical reasoning and enabling better care practices, optimizing communication, recording and care management, by maintaining a standardized language. In this way, the assessment instruments can support the elaboration of an individualized care plan, guiding the interventions to be carried out. (12) Photobiomodulation, for example, has shown positive effects in the treatment of pressure ulcers, accelerating tissue proliferation, increasing local vascularization and forming a more organized granulation tissue, favoring rapid healing. (13)

The protocol used in the institution of the study recommends measures to prevent PI as well as dressings for dressings, according to the stage of the injury, assuming that the nursing staff are not just mere recipients of information, but active agents and transformers of the reality of patients (14) bringing autonomy to nursing work. However, follow-up studies of PI healing in patients in inpatient units are still scarce, being more frequent in home care. (15)

The justification for this study is based on the need to produce knowledge about the evolution of PI in patients with MRG, given a knowledge gap. The authors' care experience in an inpatient sector for adults with MRG was the motivation for the research, where empirically it was found that many patients are hospitalized with PI and present a favorable evolution of the lesions, even with several comorbidities. Thus, the objective of the research was to describe the outcome of PIs in adult patients with multi resistant germs.

METHOD

Cohort study carried out in the inpatient unit for patients with MRG in a public hospital in southern Brazil. The research institution has a consolidated PI prevention and treatment protocol.

The population consisted of adults with MRG with PI acquired at the institution or from the community, from stage 2

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onwards, with any evolution time. Patients who, for whatever reason, did not have at least two measurements for comparison were excluded. Readmissions were treated as a new patient and a new injury, given the possibility of worsening in other sectors or at home.

The sample size calculation is based on the estimated Callegari-Jacques correlation strength. (16) Considering a significance level of 5%, power of 85%, an estimate of a minimum correlation coefficient of 0,3 between the variables, a total of 110 injuries were obtained. Selection was random according to the order of admission. Data were collected by previously trained nurses, through the weekly application of the research protocol throughout the hospital stay, from January to April 2017, within 48 hours after admission to the sector and for up to seven weeks, the maximum length of stay of the patients with PI in the period.

In order to reduce measurement bias, data collection was performed through the application of three validated instruments, the Bates-Jensen Wound Assessment Tool (BWAT), (17) Pressure Ulcer Scale for Healing (PUSH), (18) and the Nursing Outcomes Classification (NOC) based on the expected result "Wound Healing: second intention" in the Physiological Health domain, Tissue Integrity class. (19) The PI size was measured using a disposable ruler.

Data were collected through information from the patients' electronic medical records and by direct inspection of pressure injuries and analyzed with the aid of the "Statistical Package for the Social Sciences" (SPSS), version 22.

The variables were analyzed individually using descriptive and analytical statistics using the Pearson correlation test, Generalized Estimating Equation Model (GEE) and the Least Significant Difference. Values of p less than 0,05 were considered statistically significant.

The research was approved with CAEE 57253616.7.0000.5327 and met the national and international standards of ethics in research involving human beings, according to Resolution 466/12 of the National Health Council. (20) The participant or

responsible family member signed the Informed Consent Form when agreeing to participate in the research.

RESULTS

110 lesions from 36 patients were followed up for up to 7 weeks. The description of the sociodemographic data of the monitored patients is shown in Table 1. There was no PI developed in the sector during the research period and 32 (88,9%) arrived at the institution with an injury.

In the 23 patients with more than one lesion, there was a variation in the number between two and twelve PI. The most affected region was the sacrum (35; 31,9%), followed by the lower limbs (24; 21,8%) trochanters (23; 21%), glutes (15; 13,6%), ischiums (5; 4,5%), back (4; 3,6%), and other locations (4; 3,6%).

At the time of admission, 43 (39.1%) injuries were stage 2, 29 (26,4%) were stage 3, 24 (21,8%) were stage 4 and 14 (12,7%) were indefinite. The size of the wounds ranged from 0,25 to 651 cm², with a median of 14 cm². Table 2 shows the result of the follow-up of the PI. Size measurement using a ruler showed an increase in the PI area. The PUSH assessment showed a significant increase in the 4th assessment, which was reduced in the 6th assessment and remained in the 7th assessment, reaching significantly lower levels when compared to the first assessments. As for the BWAT, there was a significant reduction over time, being similar between the 3rd and 4th assessments and in the last two assessments.

Regarding the NOC, there is a significant increase from the 1st assessment to the

Table 1- Description of sociodemographic data of patients with multi resistant germs with pressure injury. Porto Alegre, RS, Brazil, 2021. (n=36)

SOCIODEMOGRAPHIC DATA	RESULTS
AGE* AGE GROUP**	45,4 ± 21,3 years
Teenager (12-18 y/o)	3 (8,3%)
Adult (19-59 y/o)	24 (66,7%)
Elderly (over 60 years old)	9 (25%)
MALE SEX**	23 (63,9%)
NUTRITIONAL STATUS**	
Eutrophics	17 (47,2%)
Malnourished	17 (47,2%)
Overweight	2 (5,6%)
NUMBER OF PRESSURE INJURIES**	
One injury	13 (36,1%)
More than one injury	23 (63,8%)
PROVENANCE**	
Emergency department	13 (36,1%)
Other inpatient units	10 (27,8%)
Intensive treatment center	8 (22,2%)
Other hospitals	5 (13,9%)
* Mean and standard deviation ** N(%) Source: survey data, 2021	

2nd assessment, which was reduced in the 3rd assessment, increasing again in the 4th assessment, remained in the 5th assessment and reduced to lower levels than the baseline in the 6th and 7th evaluation. Nutritional status was similar between assessments

(p=0,068).

DISCUSSION

There was a predominance of male patients and young adults, which corroborated

Table 2- Comparison of size means and pressure injury assessment scales during the research period. Porto Alegre, RS, Brazil, 2017. (n=110)

DAYS	1ST EVALUATION	2ND 7 DAYS	3RD 14 DAYS	4TH 21 DAYS	5TH 28 DAYS	6TH 35 DAYS	7TH 42 DAYS	P**
Cm	40,3±9,5ab	35,1±8,4a	39,3±9,7ab	52,8±16,3ab	43,2±10,5ab	56,8±12,0b	56,2±13,8ab	0,013
PUSH	12,0±0,4bc	11,5±0,5bc	11,3±0,6b	13,2±0,5d	13,2±0,8cd	7,3±1,5a	6,3±1,5a	<0,001
BWAT	34,8±1,0e	33,4±1,0d	25,0±2,2bc	26,5±3,3c	19,1±3,6ab	18,4±3,7a	15,4±3,8a	<0,001
NOC	65,1±0,9 c	66,6±0,9 d	53,2±3,7 b	66,4±1,2 cd	67,4±1,5 cd	35,1±7,0 a	34,7±8,2 a	<0,001

* n(%)

** Generalized Estimating Equation Model (GEE); PUSH- Pressure Ulcer Scale for Healing; BWAT- Bates-Jensen Wound Assessment Tool; NOC- Nursing Outcomes Classification.

a,b,c,d,e Equal letters do not differ by the Least Significant Difference (LSD) test at 5% significance.

Source: Survey data, 2021.

tes data found in a study carried out with individuals with spinal cord trauma and PI in the State of Goiás. (21) As for nutritional status, the number of eutrophic patients represented 47,2%, the same amount identified as malnourished, while in the study mentioned above, the prevalence was eutrophic, followed by overweight/obese patients. (21)

The highest prevalence of PI in the sacral region (35; 31,9%), similar to that found in national and international studies. This is a worrying finding, since this type of injury is the most difficult to treat and the most costly for patients and health services, both from a financial point of view and related to healthcare risk management. (4,22)

This study identified that there was a favorable outcome in PI, with a considerable reduction in the last two inspections in the assessment carried out through instruments, despite the fact that these were chronic patients with MRG. The result found in this research reflects the quality of care provided by nursing, a professional who is available 24 hours a day, and the existence of well-defined care protocols in the institution.

The increase in size measured by a ruler may have occurred due to difficulty in measuring in some areas, such as the sacral and gluteal region, or due to measurement error, since the values found do not follow a parameter like the other results. It is known that the instruments make it possible to analyze the PI in a more detailed way and the results found show a reduction in other indicators of the lesion, such as drainage, necrosis, among other characteristics. (10)

The result obtained in BWAT showed a reduction after 28 days of hospitalization and in PUSH and NOC after 35 days. An assessment carried out in elderly people with PI under home follow-up identified a reduction in PI between four and six weeks, with a median of 44 days, (15) similar to the one found in this research. Regarding the stage of the injury and healing time, it was found that the PIs of hospitalization showed greater tissue involvement, with a predominance of stage 3, 4 and non-stable (60.9%) lesions, differing from the stu-

dy with elderly people at home. This data indicates that the most severe PIs during hospitalization had the same healing time as stage 2 injuries at home. (15)

The use of scales is identified as an ideal strategy for monitoring the healing of PIs and allows the nurse to make a careful assessment of the lesions. It can be seen that PUSH has been the most used instrument, due to its practicality in its application, with BWATS in second place. (23) Noteworthy here is the use of the NOC, which is a standardized nursing language system and has been gaining space in clinical studies and research on PI to assess the interventions performed by nursing, in addition to directing care planning. The NOC indicators guide the planning of nursing interventions for PI, including the type of dressing, frequency of exchanges and use of complementary therapies, among others. (11)

The development of PI increases the severity of patients and is related to the emergence of infections, electrolyte disturbances, congestive heart failure, paralysis, weight loss, cardiovascular procedures, invasive mechanical ventilation, with a consequent increase in hospital stay and the possibility of readmissions. (4) It is considered a serious adverse event within healthcare institutions. However, this study identified PI prior to admission, indicating the need for more effective public and social policies.

The education of care teams is seen as an ally in the implementation of recommended protocols, in addition to empowerment on the subject. Although many professionals know the prevention strategies for this type of adverse event in clinical practice, these measures are not always used. (24) There may be many barriers that distance the real panorama from an ideal scenario, but it must be considered that, given the consequences of this type of event, preventive measures are the action to be prioritized.

CONCLUSION

This study achieved its objective by identifying a reduction in PIs in patients with MRG after 35 days of hospitalization. It contributes to professional practice as it demonstrates that the commitment of the nursing team in caring for patients with PI and the presence of a well-defined protocol and knowledge of everyone in the institution were effective for a favorable outcome in improving the conditions of PIs.

As a limitation of the research, it is understood that the small sample makes it difficult to generalize the data to other realities. As a contribution, it was found that the use of instruments facilitates careful assessment and standardizes the language among the members of the nursing team..

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