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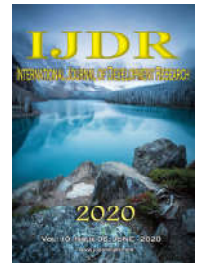
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RESEARCH ARTICLE

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PROFILE OF PATIENTS WITH SEPSIS ADMITTED IN THE INTENSIVE CARE UNIT OF A TEACHING HOSPITAL IN BRAZIL

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ABSTRACT

The study aimed to characterize patients with sepsis in a hospital environment. This is a descriptive, cross-sectional and quantitative study, carried out from October 2017 to April 2018, in a teaching hospital in the Northeast Region of Brazil. The sample consisted of 74 patients admitted to the infirmary and the general intensive care unit. Among those surveyed, 54.1% of males, ages ranged from 20 to 90 years, with a mean of 52.9 years. In relation to the outbreak of infection, the most frequent was pulmonary (31.1%), followed by abdominal (17.6%) and urological (12.2%). Regarding the outcome, 24.3% died, followed by 17.6% who were discharged from hospital. According to the analyzed data, it was observed that sepsis affects mainly male patients, old-aged, being the infection originated mainly in the pulmonary focus and as the main outcome the death. To know the clinical characteristics of patients with sepsis may help to guide actions in the hospital environment, since knowing the profile of patients favors the adoption of criteria and specific assistance goals for these cases. Thus, it is expected that the results of this study may stimulate the implementation of care measures aimed at preventing sepsis and translate into improved quality of care provided to patients.

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INTRODUCTION

Sepsis is defined as a host's unregulated response to infection, which presents itself through several clinical phases. It is one of the main health problems that affects millions of people worldwide each year. And like other illnesses, early identification and proper management in the first hours after the development of sepsis improve treatment results and patients' prognosis (RHODES et al., 2017). In the context of Intensive Care Units (ICU) the number of sepsis cases is

alarming. Data from the national Sepsis Prevalence Assessment Database (SPREAD) study conducted by the Instituto Latino Americano de Sepse (Latin American Sepsis Institute), showed that 30% of the beds were occupied by patients with sepsis or septic shock, and the mortality rate in these patients was 55%. Of the total financial resources of the ICUs, 20 to 40% were used to treat patients with sepsis (Instituto Latino Americano de Sepse, 2015). In 2002, Alarming sepsis statistics motivated the creation of the worldwide campaign to combat sepsis called Survival Sepse

Campaign, with the objective of reducing mortality by 25% of the total cases. Among the goals to reach this target, the campaign encourages the improvement of diagnosis, the use of appropriate treatments, education for health professionals, quality of care, the development of care guidelines and the implementation of a performance improvement program. (RHODES et al., 2017). To help in the early recognition of the existence or progression of sepsis, tools have been created that are based on clinical parameters that indicate whether or not there are signs of a systemic response. These instruments are the Sequential Organ Failure Assessment (SOFA) and the quick Sequential Organ Failure Assessment (qSOFA). SOFA helps health professionals to estimate the risk of morbidity and mortality due to sepsis, using six different scores for the respiratory, cardiovascular, hepatic, coagulation, renal and neurological systems. In turn, qSOFA is used to identify patients with suspected sepsis more quickly. The criteria used are: systolic blood pressure less than 100 mmHg, respiratory rate greater than 22 irpm and change in mental status (MACHADO et al., 2016). After the identification of patients with suspicion or with sepsis already installed, procedures that aim to improve the patient's prognosis should be performed immediately, within the first hours. The Sepsis Survival Campaign (CSS), proposes packages or bundles of interventions and therapies establishing priorities in the treatment of the disease. The first should be performed within the first three hours and the second within the first six hours (RHODES et al., 2017).

The best recommendations and measures based on scientific evidence in the management of sepsis are included in these packages. One of these measures is the collection of a sample for the measurement of serum lactate, an important marker of tissue perfusion, and its result can guide the beginning of volume resuscitation, even in the absence of pronounced clinical signs. According to Bakker (2017), lactate levels equivalent to or greater than 4.0 mm / L collected in the initial phase of sepsis are essential to guide therapeutic actions. Along with lactate collection, another important measure is early antibiotic therapy. It should be started as quickly as possible and can be done based on the result of blood culture collection if the result is already present at the time of diagnosis. Blood culture collections are recommended for all patients regardless of the suspected focus and as quickly as possible, as the result is necessary to initiate the most effective antimicrobial therapy. However, the result of blood culture collection should not delay the administration of antibiotics as it can increase patient mortality (RHODES et al., 2017). These procedures can be found in the attendance protocols, which can be performed by each institution established in the Sepsis Survival Campaign guidelines. The protocols aim to optimize care for patients with sepsis, through norms and procedures that order and standardize the steps to be adopted by the teams responsible for the patient (Instituto Latino Americano de Sepse, 2016). In the hospital context, nursing works with greater security as its main activities subsidized by protocols that guarantee the inheritance of care. It is known that nursing professionals remain with more time in contact with patients and that is why they are essential in identifying clinical signs suggestive of sepsis (GARRIDO et al., 2017).

The nurse must assess, identify and act on entry situations, signaling clinical procedures early for the other team members and favor the beginning of the implementation of the protocol in patients with suspected sepsis (SILVA et al., 2017). In view

of the relevance of the theme and the need to know epidemiological aspects of sepsis, it is justifi this research, since, knowing the clinical characteristics of patients, have a better targeting of the measures to be used in the management of sepsis, which have repercussions in reducing mortality rates. Given the above, this study aimed to characterize the clinical profile of patients with sepsis in the hospital environment.

METHODOLOGY

This is a descriptive, cross-sectional study with a quantitative approach to the data, carried out in a teaching hospital in the Northeast of Brazil. Data collection was carried out from October 2017 to April 2018. The data collection instrument was composed of the following variables: sex, age, clinical history, probable focus of sepsis, lactate, blood culture, infectious agents and outcome at end of patient follow-up (discharge, death, hospitalization and clinical improvement). The data were selected by consulting the medical records and identifying a medical diagnosis of suspected sepsis with an open sepsis protocol. For a composition of the study of this study, the following requirements were adopted: age equal to or above 18 years old, being hospitalized in the wards or general intensive care unit, initiated or sepsis protocol during the data collection period. Patients admitted with a confirmed diagnosis of sepsis and those who did not complete the protocol due to transfer to other services were excluded. The plan-type data collection instrument was filled in daily with data obtained from medical records and subsequently compared to sepsis case records monitored by the hospital infection control committee. The conduct of the research followed the ethical precepts of research in human beings of the National Health Council and had a favorable opinion from the research ethics committee of the Federal University of Rio Grande do Norte, CAAE n° 36086414.0.0000.5537. The data were digitized in the Microsoft Excel XP program and analyzed using simple descriptive statistics in absolute numbers and percentages.

RESULTS

71 patients participated in the study, 4 of whom were admitted to the ICU and 29 to the wards. Of the total number of patients, 39 (54.2%) men and 33 (45.8%) women. As the ages of the researchers vary between 20 and 90 years, with an average of 52.9 years, an age range of 61 to 70 years corresponds to 23.7%; followed over 70 years (20.8%), as shown in the table below.

Table 1. Demographic characteristics of patients with sepsis admitted to a teaching hospital in Rio Grande do Norte, 2017 – 2018

Variables	n	%
Sex		
Female	33	46.4
Male	38	53.6
Age		
20 to 30	10	14.1
31 to 40	8	11.3
41 to 50	7	9.8
51 to 60	14	19.7
61 to 70	17	23.9
Over 70	15	21.2

The diagnoses of admission to the units of patients with sepsis were varied, approximately 40 different types, among them the most frequent were neoplasms (28%), kidney and urological

problems (11%), neurological (11%) and cardiovascular (11%), according to the table below.

Table 2. Etiologic of admission of patients with sepsis admitted to a teaching hospital in Rio Grande do Norte, 2017 – 2018

Variables	n	%
Etiologies		
Neoplasms	19	28%
Respiratory System Problems	5	7%
Cardiovascular System Problems	8	11%
Renal and urological system problems	8	11%
Neurological System Problems	8	11%
Liver System Problems	5	7%
Gastrointestinal system problems	5	7%
Problems in the endocrine system	1	1%
Otherproblems	12	17%

As for the symptoms presented by the patients, some were evaluated by the criteria of the Síndrome da respóstainflamatóriasistêmica (Systemic Inflammatory Response Syndrome), others by the qSOFA criteria. The spreadsheet contained the space to answer yes or no regarding the appearance of the criteria. Some patients met all the criteria and others only some. The criteria were tachycardia, dyspnea, leukocytosis, tachypnea, hyperthermia, oliguria, hypotension and decreased level of consciousness. Most patients presented only 1 criterion, 38% for SIRS and 34% for qSOFA. Regarding the focus of sepsis, 32% were pulmonary, 18% abdominal, 13% urinary, 4% skin and integuments and 1% bloodstream infection. The remaining 32% correspond to undefined or unregistered outbreaks. Regarding the lactate collection time, it was observed that 75% was collected within the initial 3 hours, but 18% was not collected. Although in most patients, lactate was collected in a timely manner, it was observed that the laboratory response time with the result release was extended in some cases. When analyzing the time for the result, it was seen that 18 results (34%) were delivered in less than or equal to 60 minutes; 13 (25%) were delivered between 61 and 120 minutes; 11 (21%) were delivered between 121 and 180 min and 5 results (9%) took more than 180 minutes. Regarding the identification of the infectious agent, not all patients collected blood cultures. Of the 61 that harvested, 12 (20%) isolated gram negative bacteria and 3 (5%) gram positive, the rest were negative blood cultures or unrecorded results. Among the gram negative, the main ones were 4 of the genus *Klebsiella*, 3 *Pseudomonas*, 1 *Acinetobacter*, 1 *Escherichia*, 1 *Stenotrophomonas* and 1 *Proteus*. Regarding gram positive bacteria, the main ones were 1 of the *Staphylococcus* genus and 1 *Enterococcus*. In the present study, it was seen that of all the patients who developed sepsis, 19 (27%) died, 13 (18%) were discharged, 4 (6%) achieved clinical improvement, 4 (6%) remained hospitalized and 31 (44%) did not have the outcome recorded. Of the 19 who died, 1 died from underlying disease.

DISCUSSION

The results of the research help a better understanding of the characteristics that a patient with sepsis can present. Knowing these characteristics makes it possible to expand the available data to support actions that interfere in the reduction of sepsis cases. Among the patients involved in the research, there was a male prevalence (54.1%), which was also evidenced by other studies (CRUZ; MACEDO, 2016; ZONTA et al., 2018; GALVÃO et al., 2019). Although there are studies addressing this issue of the relationship between sex and the occurrence of

sepsis, concrete facts have not yet been identified in humans (PAPATHANASSOGLU et al., 2017). The age of the patients evaluated in this study are in accordance with a similar study conducted in 2016, in which 25% of the patients with sepsis were over 65 years old, showing that high age, in addition to being a common characteristic of patients with sepsis, makes them more susceptible to disease due to physiological changes resulting from aging, comorbidities, the high frequency of illness (BARROS; MAIA; MONTEIRO, 2016). According to CSS, the symptoms used as criteria to include in the sepsis protocol are: hypotension, oliguria or elevated creatinine; PaO₂ / FiO₂ ratio <300 or need for O₂ to maintain SpO₂ > 90%; platelet count <100,000 / mm³ or 50% reduction in the number of platelets in relation to the highest value recorded in the last 3 days; lactate above the reference value; lowering the level of consciousness, agitation, delirium; significant increase in bilirubins (> 2x the reference value). These symptoms were presented by the study patients (RHODES et al., 2017). The identification of the bacteria in the culture tests analyzed, revealed that in all patients the infections were caused by common microorganisms in hospital environments, however, all of them are extremely important from an epidemiological point of view. This result in particular, alerts to the adoption of good practices, especially hand washing, since the spread of these microorganisms in the hospital environment is directly related to health care (PRADO et al., 2018).

The identification of the focus is important so that there is an improvement in the patient's prognosis, through the implementation of control measures. The guidelines of the Sepsis Survival Campaign recommend that this control be done between 6 and 12 hours, and if the control of the focus is effective, patients have shorter hospital stays and lower risk of mortality (MARTÍNEZ et al., 2017). According to the guidelines of the Sepsis Survival Campaign, the result of the lactate collection must be delivered within 60 minutes (Instituto Latino Americano de Sepse, 2017). It is known that lactate and its relationship to tissue perfusion is still being studied, but it was detected that there was a reduction in mortality in lactate-guided volume resuscitation when compared to resuscitation without this monitoring. Therefore, the delay in the result of the collection of arterial lactates also implies a delay in targeted actions and can interfere in the mortality rates of patients with sepsis (RHODES et al., 2017). Regarding the results of cultures, it is not always possible to identify the microorganism, as some results are negative, thus making it difficult to know what to combat. It is also necessary to identify the etiological agent, as the resistance profile can be a factor that determines the patient's prognosis. In this study, some bacteria were identified. They are species present in the microbial flora of the skin itself and that is why it is important to emphasize that good biosafety practices for the patient are important for the prevention of sepsis or its complications (VIANA; MACHADO; SOUZA, 2017).

A study with septic patients revealed similar data, in which about 31% of patients died (PRADO et al., 2018). Diverging from this finding Moura et al. (2017) identified that 66.6% were discharged from the hospital. It should be noted that the divergences observed regarding the outcome can be influenced by several factors, such as gender, age, associated comorbidities, characteristics of the etiological agents and immunological responses of each individual, the therapeutic approaches implemented, in addition to other aspects, not yet

clearly elucidated in the literature. With the development of this study, it is possible to know the characteristics of patients with sepsis and also observe the importance of monitoring quality indicators of care for hospitalized patients. The participation of the hospital's nursing team in the early identification of signs suggestive of sepsis was notorious, and the extent to which the adoption of an institutional protocol that guides and standardizes conduct, can contribute to improving care. Improvement in care can be done when basic patient safety protocols are followed, which is one of the six attributes of quality of care. As noted in the study, many of the microorganisms are on the skin of professionals who come into contact with the patient. If these professionals do not adopt safety measures, they end up increasing the rates of Healthcare Associated Infections (HAIs), which are very prevalent in health services and need to be controlled. That is why the National Program for the Prevention and Control of Infections Related to Health Care (PNPCIRAS) was created, which aims to reduce the incidence of HAIs in Brazil through reductionist goals (ANVISA, 2016).

Conclusion

The results of the present study reveal that the patients with sepsis were male, elderly, with infection originating mainly in the pulmonary focus, caused by gram-negative bacteria, with death or the most common outcome. In most patients, the lactate dosage was collected in the first three hours, as recommended, however, the laboratory response time in most cases was longer than allowed. It is believed that, it knows the clinical profile of patients with auxiliary separation or directing the actions of professionals in the hospital environment and favors the planning of assistance according to the institutional protocol adopted. Thus, considering the impact of sepsis and its treatment on hospital environments, and based on the results of this study, expect further research to be carried out, with a view to optimizing the process of identification and management of sepsis, using the results of the quality of care and safety to patients. The study carried out has limitations on the interpretation of some data. As they were analyzed using an excel spreadsheet, some information was not clear and concise. Another limitation was the filling allowed by the spreadsheet, which made it impossible to analyze other variables monitored in patients with sepsis.

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