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RESEARCH

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CLINICAL PROFILE OF PATIENTS WITH SEPSIS ADMITTED TO AN INTENSIVE CARE UNIT: A CROSS-CUTTING STUDY

Perfil clínico de pacientes com sepse internados em unidade de terapia intensiva: um estudo transversal
Perfil clínico de pacientes con sepsis ingresados en unidad de cuidados intensivos: estudio transversal

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ABSTRACT

Objective: to identify the clinical profile of patients with sepsis admitted to an Intensive Care Unit. **Method:** documentary research. The sample included 50 medical records of patients with sepsis. The analysis was performed using descriptive statistics and Pearson's Chi-Square test. The study was approved by the Ethics and Research Committee under the protocol number 3,779,654. **Results:** the mean age was 66.4 years, males who came from the emergency room prevailed, with central venous access and indwelling urinary catheter, pulmonary sepsis, presence of cardiovascular disorders, and death as an outcome. There was a significant association between gastrointestinal disorders and aging with abdominal sepsis. **Conclusion:** it is necessary to strengthen public health policies aimed at the professionals' qualification in order to prevent and early recognize sepsis.

DESCRIPTORS: Nursing; sepsis; Intensive care unit; Public health.

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RESUMO

Objetivo: identificar o perfil clínico de pacientes com sepse internados em Unidade de Terapia Intensiva. **Método:** pesquisa documental. A amostra contou com 50 prontuários de pacientes com quadro de sepse. A análise foi realizada através de estatística descritiva e teste de Qui-Quadrado de Pearson. O estudo foi aprovado pelo Comitê de Ética em Pesquisa sob número de protocolo 3.779.654. **Resultados:** idade média foi de 66,4 anos, prevaleceram os indivíduos do sexo masculino, que eram procedentes da emergência, com acesso venoso central e sondagem vesical de demora, sepse pulmonar, presença de distúrbios cardiovasculares e óbito como desfecho. Observou-se associação significativa entre distúrbios gastrointestinais e envelhecimento com sepse abdominal. **Conclusão:** é necessário o fortalecimento de políticas públicas de saúde voltadas para a qualificação dos profissionais com intuito de prevenir e reconhecer precocemente a sepse.

DESCRITORES: Enfermagem; Sepse; Unidade de terapia intensiva; Saúde pública.

RESUMEN

Objetivo: identificar el perfil clínico de los pacientes con sepsis ingresados en la Unidad de Cuidados Intensivos. **Método:** investigación documental. La muestra incluyó 50 historias clínicas de pacientes con sepsis. El análisis se realizó mediante estadística descriptiva y la prueba de chi-cuadrado de Pearson. El estudio fue aprobado por el Comité de Ética en Investigación con el número de protocolo 3.779.654. **Resultados:** la edad promedio fue de 66,4 años, predominaron los varones que acudieron a urgencias, con acceso venoso central y sonda vesical permanente, sepsis pulmonar, presencia de trastornos cardiovasculares y muerte como desenlace. Hubo una asociación significativa entre los trastornos gastrointestinales y el envejecimiento con sepsis abdominal. **Conclusión:** es necesario fortalecer las políticas de salud pública orientadas a la formación de profesionales para prevenir y reconocer precozmente la sepsis.

DESCRIPTORES: Enfermería; Septicemia; Unidad de terapia intensiva; Salud pública.

INTRODUCTION

Sepsis is a clinical condition in which severe organic dysfunction is triggered by the individual's uncontrolled response to an infectious process. Such condition is generated by the imbalance in the action of immunological and inflammatory factors promoting an inflammatory response that lasts in the body.¹

According to epidemiological data, sepsis is the main cause of non-cardiological death in the Intensive Care Unit (ICU) and one of the main causes of late hospital mortality arising as a consequence of different types of pathologies involving different organ systems.²

The risk factors described in the literature for the development and worsening of the clinical picture of sepsis are: aging, male gender, longer hospital stay, chronic diseases and use of invasive devices.³

It is estimated that annually around 15 to 17 million people worldwide are affected with sepsis. Among these, 670 thousand are residents in Brazil, in which 50% of the cases have death as an outcome.⁴

Research carried out in a hospital unit in Paraná revealed that 50% of patients diagnosed with sepsis had death as an outcome, showing the difficulty in reversing the condition after the installation of the systemic inflammatory response. Such organic dysfunction is related to the increase in life expectancy and the consequent increase in the number of hospitalized elderly people affected by infections, especially in the pulmonary and abdominal sites.⁵

Furthermore, on the European continent, there are about 700,000 deaths annually due to septic conditions.⁶ In Pakistan,

a study showed that 183 (42%) patients with sepsis died and 79 (31%) of patients who survived were readmitted to a hospital unit after an average of 180 days.⁷

Septic patients may present tachypnea, tachycardia, hypotension, hypothermia or hyperthermia, leukocytosis or leukopenia, as well as blood lactate levels in excess and altered level of consciousness.⁸

Early diagnosis and therapy establishment are the main strategies to reduce the morbidity and mortality rate in clients. However, they are often performed late, due to the nonspecific nature of the symptoms. For this, it is necessary for the professionals to know about the particularities of infectious conditions and worsening of the clinical condition, suggestive of the development of sepsis.⁹

The nurse is one of the professionals who work on the front line of early recognition of this clinical condition, requiring knowledge about the pathophysiology, its signs and symptoms. The nursing team, through the Nursing Care Systematization (NCS), must act on the needs affected by sepsis, such as oxygenation, vascular and thermal regulation, hydration, nutrition, and physical integrity.¹⁰

From this perspective, considering the high incidence of sepsis in the ICU and the importance of knowing the factors associated with this clinical condition, understanding the clinical and epidemiological characteristics in this scenario favors the strengthening of health actions and clinical protocols to qualify the performance of the multidisciplinary team in order to reduce the risk of sepsis, perform an early diagnosis and reduce negative outcomes.

Therefore, the question is: What is the clinical profile of patients with sepsis in the ICU? To answer this question, this

research aimed to identify the clinical profile of patients with sepsis admitted to the ICU.

METHOD

This is a cross-sectional, descriptive, documentary study with a quantitative approach, developed through the analysis of medical records from patients with sepsis admitted to the ICU of a public hospital located in the city of João Pessoa, Paraíba, Brazil.

Data from individuals hospitalized from January to December of 2019 diagnosed with sepsis were used. The following inclusion criteria were applied: clients admitted to the ICU with a closed diagnosis of the pathology or who have evolved it after their admission; in addition, the medical record should be duly completed and with an admission date. Medical records that were not viable for analysis due to bad handwriting or document scarcity were excluded.

The study population included the medical records of patients diagnosed with sepsis in the ICU of that hospital in 2019. The initial sample consisted of 68 medical records. The final sample consisted of 50 cases of sepsis, being all medical records that met the inclusion criteria and were available at the Medical Archive and Statistics Service (SAME) of the institution.

Data collection took place between January and February of 2020, supported by a semi-structured instrument built by the researchers, which addressed sociodemographic data (age, gender, education, profession and marital status) and clinical characteristics of the participants, among them: the sepsis' focus, underlying diseases, invasive devices and outcome. It is noteworthy that in the "results" section, the variables education, profession and marital status will not be presented, since considering the clinical status of the individuals who were admitted to the ICU, it was not possible to obtain such information.

The analytical procedure took place after inserting the data in version 22.0, for Windows, of the Statistical Package for Social Sciences (SPSS). Descriptive statistics were performed using absolute and relative frequency, location measurement (mean), and scale (standard deviation). To verify associations between variables, Pearson's Chi-Square test was performed. The confidence interval (CI) used was 95%. Tests were considered statistically significant when $p < 0.05$.

It is worth emphasizing that throughout the study process, the ethical precepts involved in research with human beings, provided by Resolution 466/2012 of the National Health Council, were respected. The project was approved by the Ethics and Research Committee (CEP) under protocol number 3,779,654.

RESULTS

Of the 50 medical records analyzed, the mean age was 66.4 years (SD ± 15.3), with prevalence in the age group of 60-75 years (34%). With regard to sociodemographic and clinical characteristics, 35 (70%) are male, 36 (72%) from the emergency

departments, 50 (100%) used central venous access and indwelling urinary catheters, and 33 (66%) were affected by sepsis with pulmonary focus. In addition, 44 (88%) had cardiovascular disorders and 45 (90%) died, as shown in Table 1.

Table 1 — Characterization of patients affected by sepsis in Intensive Care Unit. João Pessoa, PB, Brazil, 2020

Variable	n (%)	CI (95%)
Age		
Adult (18-60)	14 (28,0)	(0,169-0,413)
Old age (60-75)	17 (34,0)	(0,219-0,477)
Advanced old age (75-85)	15 (30,0)	(0,185-0,435)
More advanced old age (≥ 85)	4 (8,0)	(0,026-0,176)
Total	50 (100,0)	
Gender		
Male	35 (70,0)	(0,565-0,815)
Female	15 (30,0)	(0,185-0,435)
Total	50 (100,0)	
Origin		
Emergency	36 (72,0)	(0,587-0,831)
Medical Clinic	8 (16,0)	(0,077-0,277)
Surgical Clinic	6 (12,0)	(0,037-0,203)
Total	50 (100,0)	
Invasive devices*		
Central Venous Access	50 (100,0)	(0,962-1,0)
Delayed Vesical Probing	50 (100,0)	(0,915-0,999)
Invasive Mechanical Ventilation	36 (72,0)	(0,544-0,798)
Nasogastric Probing	29 (58,0)	(0,422-0,692)
Nasoenteral Probing	18 (36,0)	(0,236-0,498)
Sepsis' focus		
Pulmonary	33 (66,0)	(0,502-0,764)
Abdominal	16 (32,0)	(0,202-0,456)
Urinary	14 (28,0)	(0,185-0,435)
Cutaneous	9 (18,0)	(0,091-0,301)
Underlying disease/disorder*		
Cardiovascular	44 (88,0)	(0,772-0,950)
Respiratory	37 (74,0)	(0,608-0,848)
Renal	31 (62,0)	(0,544-0,798)
Gastrointestinal	16 (32,0)	(0,202-0,456)
Hepatic	10 (20,0)	(0,106-0,324)
Neurological	9 (18,0)	(0,091-0,301)
Outcome		
Death	45 (90,0)	(0,797-0,963)
Hospital Discharge	4 (8,0)	(0,026-0,176)
Transference	1 (2,0)	(0,001-0,085)
Total	50 (100,0)	

Source: Survey data, 2019. * Two or more responses are possible.

After performing the Pearson's Chi-Square test, the following associations were obtained: gastrointestinal disorders and abdominal sepsis ($p=0.00$); and aging and abdominal sepsis ($p=0.01$).

DISCUSSION

Regarding the prevalence of elderly people in this study, sepsis is a common inflammatory response in patients aged with 60 years or over admitted to ICU, and it is often associated with comorbidities. Corroborating these data, a study that involved all regions of Brazil and analyzed the characteristics of sepsis in 60 municipalities, with a sample of 6,486 individuals, found that around 4,118 (63.5%) participants were 70 or older.¹¹

Due to the inherent changes of aging, such as anatomical and functional changes in organic systems, the elderly are more likely to develop Chronic Non-Communicable Diseases (CNCDs). Such diseases, in long term, culminate in a reduction of functional capacity and a growth of adverse health events, increasing hospitalization rates, making these individuals more susceptible to infectious conditions.¹²

Likewise, the elderly person is more susceptible to infectious conditions due to the reduction of defense mechanisms characteristic of innate immunity, such as phagocytosis and the action of Natural Killer (NK) lymphocytes. This reduction is associated with a disproportion of young and memory cells, providing a drop in the effectiveness of the immune defense that will result in a decrease in energy reserves responsible for maintaining homeostasis.³

Statistical analysis revealed that age is associated with the abdominal-focused sepsis. Among the gastrointestinal alterations inherent to aging, there is a reduction in motility, absorption of nutrients and production of gastric juice. These changes make the elderly more vulnerable to complications in their health condition. Thus, it emphasizes the importance of healthy eating, which promotes greater functional capacity and lower rates of gastrointestinal disorders.¹³

As for the prevalence of males, an investigation carried out in two ICUs in the state of São Paulo, with a sample of 347 medical records, confirms the data presented here by showing that 216 (62.25%) participants with sepsis were men.¹⁴

Associated with this, male individuals have a lower life expectancy, a fact that is related to the low adherence to the health service for preventive actions throughout life, as for many it can represent a sign of fragility. Beyond that, exposure to violence, alcohol and tobacco consumption, more common among this population, are responsible for the worsening of clinical health conditions.¹⁵

A survey conducted in the city of Porto Alegre (RS) revealed that 44.6% of septic patients admitted to the ICU came from the emergency department.⁹ Literature indicates that this incidence is related to the search for urgent and emergency services in the presence of severe infectious conditions, as patients report that there are structural and relational difficulties in seeking primary

care services for the initial treatment of infections prior to the sepsis development.¹⁶

With regard to invasive devices, breaking host barriers through them leaves the individual more exposed to the invasion of pathogenic microorganisms. Primary infections of the bloodstream by central venous catheter are among the most frequent infections related to health care.¹⁷

The procedure mentioned above is quite common in the ICU, which reveals the importance of using aseptic practices from insertion and handling to removal. Among such practices, hand hygiene, skin antiseptics with chlorhexidine, selection of the best place for passage and daily assessment of the need for catheter permanence are highlighted.¹⁷

In this context, a study carried out in an ICU in Belém-PA shows that vesical probing (VP) promotes increased risk or worsening of the septic condition.³ The VP is one of the competencies attributed to the nurse, through COFEN's Resolution 450/2013. The procedure must be performed in a sterile manner to avoid the proliferation of microorganisms, so the nurse has an important role in reducing the risk of sepsis.¹⁸

Regarding the focus of sepsis, a study carried out in the state of Ceará corroborates this research, in which among 193 medical records of patients with sepsis, a frequency of 128 (66.4%) cases of sepsis of pulmonary focus was obtained, followed by 11 (5.7%) of abdominal focus. The authors suggest the use of focus control techniques, such as drainage, surgical cleaning, access/device removal, and definitive control.⁸

The acquisition of infections that progress to sepsis in the pulmonary and abdominal sites are often associated with the endogenous microbiota of the respiratory and gastrointestinal system, which are quite extensive. In this sense, when there is an imbalance in homeostasis, there is a greater probability of infectious conditions.³

As for cardiovascular disorders, studies have shown that the incidence of Systemic Arterial Hypertension (SAH) in patients with sepsis is quite frequent. The literature reveals that this fact is associated with the vulnerability of people with CNCDs to progress to severe health conditions.^{14,19} Another investigation that analyzed the primary causes of death from sepsis in 60 municipalities in Brazil found that CNCDs were the most common conditions, with emphasis on diabetes mellitus and digestive diseases.¹¹

Regarding the outcome of the event in question, a study in the state of Santa Catarina, Brazil, with 367 individuals, obtained rates similar to this one, in which 268 (73%) patients died. The high lethality rate can be associated with the severity of the patients that arrived at the sector, since the number of vacancies is reduced, as well as the presence of comorbidities.¹

As for the relationship between sepsis of the abdominal focus and gastrointestinal disorders, it is considered that dysbiosis, that is, the imbalance of the intestinal microbiota, enhances the susceptibility of individuals to the development of infectious conditions. It is understood that intestinal damage in critically

ill patients, such as reduced intestinal motility, parenteral nutrition and the use of opium derivatives facilitate the expansion of multidrug-resistant bacteria.²⁰

Thus, the perfusion of the intestinal mucosa suffers significant damage during the septic condition, promoting increased permeability and consequently the bacterial and endotoxin translocation to the systemic route, as invading bacteria have the ability to act as antigens, modulating the immune response of the host individual.²¹

According to what was exposed, it is understood that the sepsis theme is very common in nursing, as it is present in several hospital sectors, especially in the ICU. In this way, the importance of qualification and constant updating of professional nurses is highlighted, since their performance in relation to critical patients is essential for the prevention of infections related to health care, as well as early recognition of this clinical condition, through the analysis of signs and symptoms and risk factors.

CONCLUSION

Through what was exposed, it is possible to conclude that the present study achieved the proposed objective. Among the results, prevailed individuals aged between 60-75 years, male, coming from emergency departments, with central venous access, pulmonary sepsis, presence of cardiovascular disease and death as an outcome. In addition, by performing a statistical test, it was found that gastrointestinal disorders and aging have a significant association with abdominal-focused sepsis.

The analysis of such data enables the strengthening of health actions aimed at preventing infections, and consequently the early recognition of sepsis, enabling a better prognosis for the individual with this clinical condition. Nurses have an important role in the multidisciplinary team, as they monitor the patient's clinical condition on a daily basis in the front team, being essential in the recognition of risk factors and signs and indicative symptoms of sepsis.

The cross-sectional design is highlighted as a limitation of the present study, which does not make it possible to establish a cause-and-effect relationship between the variables. As well as the reduced time frame and the absence of sample calculation. As difficulties, there were document shortages, poor attachment and loss of documents in the institution's archive sector. In this context, it is suggested to carry out studies with larger samples and in different social contexts, as well as those of the prospective type, establishing a cause-and-effect relationship.

However, despite the limitations, the importance of identifying the clinical profile of patients hospitalized with sepsis in the ICU is highlighted, enabling further discussions on the relationship of gastrointestinal disorders and aging with abdominal-focused sepsis. Moreover, the high rates of death from sepsis are also highlighted, encouraging the use of clinical protocols that promote the early diagnosis of this clinical condition and, consequently, the establishment of therapeutic procedures in a timely manner.

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