ORIGINAL ARTICLE

SEPSIS: ASSESSMENT OF HEALTHCARE QUALITY IN AN URGENCY AND EMERGENCY UNIT

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ABSTRACT

Introduction: Sepsis is a serious condition caused by unregulated immune response to an infection and is considered one of the leading causes of death worldwide. **Objective:** To assess the quality of care provided to septic patients in the emergency unit of a university hospital, according to the guidelines provided by the Surviving Sepsis Campaign. **Methods:** Longitudinal study conducted with septic patients in an emergency unit. Data were collected from sepsis notifications and medical records. The statistical analysis was performed by measures of central tendency and binary logistic regression. **Results:** We assessed 139 patients from the Surviving Sepsis Campaign perspective. The adequacy of the behaviors related to the performance of exams reached 64.2% for lactate, and 55.3% for blood cultures. In the first hour, 49.6% of the patients had received antimicrobial therapy. There was no compliance with the treatment for hypotension and hyperlactatemia in 69.8% of cases. Mortality reached 61.2% of the cases, and the associated risk factors were: multiple organ dysfunctions; high APACHE II and SOFA scores; hyperlactatemia; and mechanical ventilation. **Conclusion:** Care provided to patients with sepsis in the emergency unit followed most Surviving Sepsis Campaign guidelines; however, it is possible to increase compliance with the recommendations, thus resulting in better prognoses.

Keywords: Sepsis. Epidemiology. Mortality. Emergency hospital service.

INTRODUCTION

Considered one of the leading causes of mortality worldwide, sepsis has become a challenge for professionals involved in its control and treatment. In addition to the high impact on mortality, sepsis is the condition that generates the highest treatment costs for health services, reaching 24 billion US dollars a year[1].

According to The Third International Consensus Definitions for Sepsis and Septic Shock, sepsis is defined as an organic dysfunction caused by unregulated immune response to infections. Septic shock is the stage of sepsis that leads to severe circulatory and cellular metabolism changes, i.e., a state of acute circulatory failure associated with a higher probability of death[2].

In order to reduce mortality caused by sepsis worldwide, the Surviving Sepsis Campaign (SSC) proposed, from 2004, treatment guidelines based on strong scientific evidence, updated periodically[3]. Compliance with these recommendations has caused mortality rates reduction, as observed in Australia and New Zealand, where there has been a decrease from 35 to 18.4% related to improved diagnostic processes, and early administration of broad spectrum antimicrobial and more aggressive supportive therapies, as recommended by SSC[4].

A study conducted in 218 hospitals in the United States, South America, and Europe, over four years of participation in SSC, including 29,470 individuals, indicated that mortality

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rates were lower in institutions with high compliance with treatment guidelines (29%) than in institutions with low compliance (38.6%)[5]. In addition, there was a 4% decrease in length of hospital stay every 10% increase in compliance with the guidelines[5].

By updating the definitions of sepsis and septic shock, tools have been created to identify patients with suspected infections, who might have a worse prognosis in the environment outside the intensive care unit[2]. The emergency unit environment is characteristically less controlled and may have a sudden increase in patient flow and multiple potentially severe cases requiring immediate care.

Emergency units, especially those in public hospitals, have experienced numerous difficulties, such as the constant overcrowding of services, and the high demand for beds in intensive care units due to the severity of hospitalized patients.

Most cases of sepsis receive care during the first hours in the emergency units. According to the current recommendations, the first three hours of treatment are decisive for the prognosis of patients with sepsis. A study that assessed the compliance with the recommendations for care provided to septic patients in emergency units of hospitals in New York City, USA, found that early antimicrobial initiation and adequate hemodynamic resuscitation were associated with better outcomes[6].

There are few data on the prevalence of sepsis and how it is managed in the urgency and emergency sectors of Latin American hospitals. In this sense, considering the positive impact of compliance with sepsis therapeutic guidelines for reducing mortality rates, it is important to assess how the treatment of patients with sepsis in these sectors is performed in Brazilian university hospitals.

Given the above, the following question arose: Is care provided to septic patients in the emergency units in accordance with the guidelines recommended by the SSC? In order to answer this question, the objective of the present study was to assess the quality of care provided to septic patients in the emergency unit of a university hospital, according to the guidelines recommended by the SSC.

METHODS

This is a prospective longitudinal study whose sample consisted of patients admitted or who had developed sepsis or septic shock according to The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)[2]. The inclusion criteria were patients aged 18 years or older who had received care at the emergency unit of a university hospital between August 2013 and November 2014. Patients excluded from the study were those who, according to the guidelines[7] for limitation of therapeutic support, were under palliative care.

This study site was linked to a highly complex tertiary university hospital with 303 beds. This institution served approximately 120 thousand patients of the Brazilian Unified Health System per year. The emergency unit had an average occupancy rate of 136.8% and an average care provision of 61.5 patients/day, according to data obtained from the statistics section of the institution[8]. It also had an emergency laboratory and exclusive pharmacy.

At the time of the study, the treatment protocol recommended by the SSC was established in the service with the performance of sepsis protocol managers in the emergency unit, and the institution was registered in the Latin American Sepsis Institute (LASI)[9].

Data were collected from standardized sepsis notification forms of LASI[9], which include sociodemographic, clinical-epidemiological, therapeutic, and laboratory variables. These records had been completed by the sepsis care managers, who worked daily in the emergency unit.

The variables included in this study were: sex; age; presence and number of comorbidities; type of hospitalization; admission with or without sepsis; patient origin; sepsis stage classification; systemic inflammatory response syndrome (SIRS) criteria; infectious outbreaks; presence and number of organic dysfunctions; calculation of prognostic scores, such as acute physiology and chronic health evaluation II (APACHE II)[10];

sequential organ failure assessment (SOFA)[10]; time for diagnosis; use of mechanical ventilation; treatment for hypotension and hyperlactatemia; onset of antimicrobial therapy; lactate dosage; blood culture collection; length of hospital stay; and hospital outcome. We took into account the comorbidities listed in the Charlson Comorbidity Index[11].

The APACHE II score consists of a system of points based on 12 physiological parameters, age groups, and health history of patients. It is used to assess severity in critically ill patients worldwide. The worst value should be considered within the first 24 hours. The final result is obtained by adding the scores and it can vary from zero to seventy-one. The SOFA score was used to assess the severity of organ dysfunction within the first 24 hours of hospitalization. It consists of the assessment of six systems—each with a score ranging from zero to four—and can reach up to twenty-four points in total. In both scores, high scores are associated with a higher risk of death[10].

Treatment compliance criteria considered the goal-guided therapy recommendations by SSC[2], namely: compliance with antimicrobial treatment considering administration within the first hour after diagnosis of sepsis; administration of antimicrobial therapy before diagnosis of sepsis; and compliance with the collection of standardized tests (blood cultures and lactate dosage)—considered when they were collected within the first hour after organ dysfunction, and before antimicrobial administration. Regarding the treatment of hypotension and hyperlactatemia, patients who had received volume replacement by infusion of at least 30 ml/kg of crystalloid solutions within the first three hours after hypotension, and patients who had received vasoactive drugs for having remained hypotensive after volume replacement were considered compliant patients.

Data were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS), version 20.0. The categorical variables were presented as absolute and relative frequencies. We also performed binary logistic regression to obtain the odds ratio (OR), bivariate analysis, Fisher's exact test, considering 95% confidence interval (95% CI).

The continuous variables were analyzed by measures of central tendency (mean) and dispersion (standard deviation), using the Shapiro-Wilk test to determine data normality. Student's *t*-test was used to compare the means of continuous variables with normal distribution and homogeneity of variances. The nonparametric test (Mann-Whitney *U* test) was applied to data with non-normal distribution and/or heterogeneity of variances.

To analyze differences in sepsis severity (sepsis or septic shock), we used Kaplan-Meier survival curves. The outcome was mortality during hospitalization. We used Mantel-Cox log-rank test for comparisons.

The present study was approved by the Research Ethics Committee of the institution under study with Opinion No. 884.268. The research obtained a favorable opinion from the institution through data usage commitment agreement. An informed consent form was not necessary, because the research used secondary data and no information was collected directly from the patients or their family members. It should be mentioned that the present study preserved the identity of patients and that the authors committed not to use confidential information for their own benefit, respecting the ethical principles in force, according to Resolution 466/2012 of the Brazilian Ministry of Health.

RESULTS

The sample of our study consisted of 139 patients. There was a predominance of older adults, and average age was 64.2 years (SD ± 18.7). The data illustrated in Table 1 indicate that clinical causes were the main reasons for hospitalizations, with more frequent referral from secondary services. Most patients had developed sepsis upon admission to the emergency unit. Comorbidities were present in most cases, and most patients had two or more comorbidities, the most frequent being: systemic arterial hypertension (n = 81; 63.3%); neurological diseases (n = 62; 44.3%); heart diseases (n = 60; 42.8%); diabetes mellitus (n = 40; 31.3%); chronic obstructive pulmonary disease (n = 17; 13.3%); and chronic renal failure (n = 16; 12.5%).

Table 1. Sociodemographic, clinical and epidemiological characteristics of patients with sepsis, according to the outcomes. Londrina, Paraná, Brazil, 2016.

Variables	Total n (%)	Non-survivors n (%)	*p*
Sex			
Female	71 (51.1)	42 (59.2)	
Male	68 (48.9)	43 (63.2)	0.374
Type of hospitalization			
Surgery	23 (16.5)	11 (47.8)	
Clinical	116 (83.5)	74 (63.8)	0.115
Patients with comorbidities	127 (91.4)	79 (62.2)	0.297
Number of comorbidities			
One	28 (22.0)	16 (57.1)	
Two or more	99 (78.0)	63 (63.6)	0.339
Admission			
Without sepsis	101 (72.7)	62 (61.4)	
With sepsis	38 (27.3)	23 (60.5)	0.538
Patient origin			
Primary service	26 (18.7)	18 (69.2)	0.349
Secondary service	50 (36.0)	33 (66.0)	0.379
Tertiary service	8 (5.8)	5 (62.5)	0.623
Mobile emergency service	32 (23.0)	18 (56.2)	0.327
Sought by patients	23 (16.5)	11 (47.8)	0.151

Source: Research data, 2016.

*SD: standard deviation. Bivariate analysis. Fisher's exact test.

Considering the sepsis classification criteria, there was a predominance of septic shock cases (Table 2). Two or more signs of SIRS were present in 126 septic patients (90.7%), tachycardia and tachypnea being more frequent, followed by leukocytosis and hyperthermia. The most common infectious focus was pneumonia, and most patients had only one sepsis-related infectious focus. The most frequent organ dysfunction was respiratory, followed by hemodynamics. The average APACHE II score was 25.61 (SD ± 9.09), and the SOFA score was 7.72 (SD ± 4.39). More than half of the septic patients required mechanical ventilation (Table 2).

In the univariate analysis, the variables associated with higher risk of death were: hemodynamic dysfunction; multiple organ dysfunctions; the APACHE II and SOFA prognostic scores; and use of mechanical ventilation (Table 2).

Table 2. Analysis of risk factors for death. Londrina, Paraná, Brazil, 2016.

	Total n (%)	Non-survivor n (%)	OR	95% CI	*p*
Classification					
Sepsis	94 (67.6)	50 (53.2)			
Septic shock	45 (32.4)	35 (77.8)	0.32	0.14-0.73	0.004
Number of SIRS* criteria					
1	13 (9.4)	8 (61.5)	1.00		
2	88 (63.3)	53 (60.2)	0.95	0.29-3.13	0.928
3	31 (22.3)	20 (64.5)	1.14	0.29-4.33	0.851
4	7 (5.0)	4 (57.1)	0.83	0.13-5.39	0.848
SIRS criteria					
Tachycardia	91 (65)	57 (63.3)	1.29	0.63-2.63	0.296
Tachypneia	90 (65)	57 (63.3)	1.29	0.63-2.63	0.296
Leukocyte	73 (52.1)	43 (58.9)	0.81	0.41-1.62	0.345
Hyperthermia	51 (36.4)	27 (54)	0.62	0.30-1.27	0.132
Hypothermia	8 (5.7)	6 (75.0)	1.97	0.38-10.16	0.334
Leukopenia	2 (1.4)	2 (100)	-	-	0.372

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Number of infectious foci**					
1	114 (82)	69 (60.5)			
2 or 3	25 (18)	16 (64)	1.15	0.47-2.84	0.466
Main infectious foci					
Pneumonia	115 (82.7)	73 (63.5)	1.73	0.71-4.21	0.158
Urinary infection	30 (21.6)	15 (50)	0.55	0.24-1.25	0.114
Abdominal infection	8 (5.7)	3 (37.5)	0.35	0.08-1.56	0.149
Other infections***	13 (9.4)	11 (90)	3.86	0.82-18.17	0.058
Number of dysfunctions					
1	39 (28.0)	19 (48.7)	1.00		
2	55 (39.6)	34 (61.8)	1.70	0.74-3.91	0.208
3 or more	45 (32.4)	32 (71.1)	2.59	1.05-6.37	0.038
Organ dysfunctions****					
Hemodynamic	78 (56.1)	53 (67.9)	1.92	0.96-3.83	0.046
Respiratory	118 (84.9)	71 (60.2)	0.75	0.28-2.01	0.379
Lactate alterations	44 (31.7)	27 (61.4)	1.01	0.48-2.11	0.562
Renal	31 (22.3)	22 (71.0)	1.74	0.73-4.14	0.143
Hematological	14 (10.1)	11 (78.6)	2.52	0.67-9.51	0.129
Hepatic	17 (12.2)	9 (52.9)	0.68	0.24-1.88	0.313
APACHE II (SD)	25,61 (9.09)	27,75 (8.75)	1.08	1.03-1.12	0.001
SOFA (SD)	7.72 (4.39)	8,67 (4.21)	1.15	1.05-1.26	0.002
Use of mechanical ventilation	97 (69.8)	73 (75.3)	7.60	3.37-17.14	<0.001

Source: Research data, 2016.
* Systemic inflammatory response syndrome; ** The total number of infections was greater than the number of patients, as they could exhibit more than one focus, a fact observed in 25 of them; *** Bones, prostheses, bloodstream, and skin; **** The total number of organ dysfunctions was greater than the number of patients, as they could exhibit more than one. Binary logistic regression, odds ratio (OR), CI: confidence interval, Fisher's exact test.

The mean hospital length of stay was 22 days (SD ± 20.7), with a slight variation between non-surviving patients (mean: 20.8 days; SD ± 18.5) and surviving patients (mean: 24 days; SD ± 23.8). In the present study, 85 patients died (61.2%). Of them, 50 (53.2%) due to sepsis, and 35 (77.8%) due to septic shock. The survival curve indicates that patients with septic shock had higher mortality rates, and deaths occurred earlier than in patients with sepsis ($p = 0.005$) (Figure 1).
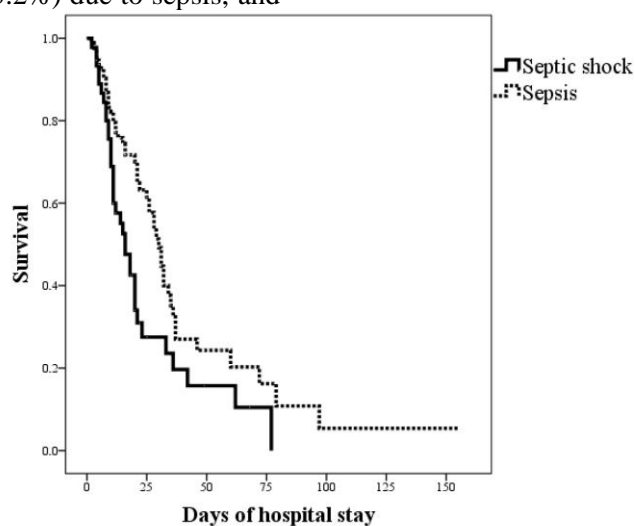

Figure 1. Kaplan-Meier survival curves of patients with sepsis and septic shock. Londrina, Paraná, Brazil, 2016. Source: Research data, 2016. Cox log-rank test ($p = 0.005$).

The average time for sepsis diagnosis from the onset of organ dysfunction was three hours and thirty-seven minutes (217 minutes; SD ± 6:08). The diagnosis had been made within the first hour of organ dysfunction in 90 patients (64.7%). Of these, 78 (86.6%) were at time zero, including patients diagnosed with sepsis on admission, and diagnosed at the time of dysfunction.

In the univariate analysis of compliance criteria for sepsis treatment, we considered: lactate (OR: 1.02; CI: 0.51-2.02; $p = 0.542$); blood cultures (OR: 0.89; CI: 0.44-1.79; $p = 0.448$); initiation of antimicrobial therapy (OR: 0.97; CI: 0.49-1.93; $p = 0.542$); and treatment of hypotension and hyperlactatemia (OR: 0.89; CI: 0.30-2.66; $p = 0.526$). There was no statistical association between these criteria and mortality rates.

Lactate dosage was performed in 109 patients (78.4%) after sepsis diagnosis, of which 70 (64.2%) were adequate, i.e., collected within the first three hours. Mean lactate values in the first 24 hours after sepsis onset were higher in non-surviving patients (2.70 mmol/L; SD ± 2.30) compared to values in surviving patients (1.95 mmol/L; SD ± 1.78; $p = 0.011$). It is worth mentioning that 32 patients (29.3%) had lactate values greater than 2 mmol/L, and the values of 18 patients (14.7%) were greater than 4 mmol/L, i.e., twice the reference value for normality.

Blood cultures were collected from 103 patients (74.1%) and, according to SSC guidelines, 57 (55.3%) were performed at the appropriate time. Positivity was found in 13 cultures (12.1%), with gram-negative bacteria predominating in seven (53.8%) and beta-lactam resistance in nine (69.2%). Regarding antimicrobial therapy, 69 patients (49.6%) received antimicrobials within the first hour after diagnosis, and 43 patients (30.9%) were undergoing this therapy before the sepsis episode, showing that the infection was already under treatment. Of the patients undergoing prior antimicrobial therapy, 12 (27.9%) were subjected to multidrug therapy. Among the 94 patients (67.6%) treated after the diagnosis of sepsis, the average antimicrobial onset time was 175 minutes (SD ± 191 minutes), with a minimum of zero and a maximum of seventeen hours (1,020 minutes).

DISCUSSION

The results of the present study indicated high rates of sepsis and lower rates of septic shocks. These data are similar to those observed in Brazilian hospitals, in which sepsis and septic shocks have reached 62.8% and 37.2%, respectively[9].

Pneumonia has been pointed out as one of the main infectious foci for the development of sepsis. In our study, the percentage found was higher than those observed by studies conducted in emergency units of hospitals in Spain (44% and 47.5%)[12,13] and in four hospitals in the United States (35%)[14]. This fact may be related to the use of mechanical ventilation in most cases of our study. Regarding other infectious foci, the same studies had indicated that urinary tract infection (20, 25.5, and 25%) and abdominal infection (8, 16.7, and 11%) had shown similar results[12-14]. In Brazil, the findings also corroborate the data of the present study, showing that pneumonia remains the main infectious focus[15,16]. However, abdominal infection represents the second infectious focus, more common in older adult patients[16].

SSC recommends early diagnosis of sepsis; however, the time for sepsis diagnosis was longer in public hospitals than in private hospitals in Brazil[15]. In contrast, more than half of the patients in the present study were diagnosed within the first hour of dysfunction, a result that may be related to the performance of managers of the sepsis treatment protocol established in the emergency unit of the institution where we conducted this study.

Lactate dosage was performed in half of the collections, which is a result similar to that found in a survey conducted in Spain, where lactate collection had been performed in 56% of cases, but within six hours after diagnosis, a fact that may delay treatment implementation and contribute to worse prognosis[12]. However, overall mortality (26%) had been lower than the findings of our study, which can be explained by the fact that patients had been treated in intermediate and intensive care units[12], which have more adequate resources for treating sepsis.

Blood samples were collected in most patients; however, in less than half of the cases, they were obtained before the first dose of

antimicrobials, which may be related to the low positivity found (12.3%), thus making it difficult to determine the etiological agents. In an emergency unit of a tertiary hospital in Spain, it was observed that blood collections had been performed before antimicrobial initiation in 60% of sepsis cases, i.e., a higher value than that observed in the present study[12]. In a study conducted in Brazil, it was observed that compliance with blood collection had been lower, both in public (16.3%) and in private hospitals (34.1%)[17]. These findings indicate that this procedure should be prioritized to assist in the identification of the etiological agents and enable antimicrobial de-escalation in a program of rational use of medications.

Regarding antimicrobial treatment, the SSC recommends that the first dose should be administered early. In the present study, the waiting time for the establishment of antimicrobial therapy was higher and longer than the result obtained (81 minutes) in an emergency unit in the United States, in which the sepsis protocol had been established[18]. Another study indicated that patients diagnosed with sepsis by the mobile emergency service had received antimicrobial therapy earlier, approximately 33 minutes earlier than patients admitted by other means[19]. This fact demonstrates the importance of prehospital care teams in the early detection of sepsis, given that the delay in the establishment of antimicrobial therapy directly interferes with survival, and predisposes the worsening of the condition, as well as the evolution to the stage of septic shock.

The APACHE II and SOFA scores in the present study were higher than those found in patients who died in Brazilian public and private hospitals, with 25 and 23 points in APACHE II, and seven points in SOFA, respectively[15]. The significant statistical association between these scores and death was confirmed in our study, reflecting the severity of the condition associated with sepsis.

Regarding organic dysfunctions, the outcomes in Brazilian hospitals were similar to those observed in our study, with respiratory (81.5%) and hemodynamic (60.4%) dysfunctions being more frequent, especially in patients who died[15]. The survival curve analysis indicated the severity of the septic shock stage due to the rapid and more frequent occurrence of deaths. This outcome demonstrates that one of the objectives of the diagnosis and treatment of sepsis should be preventing progression to the shock stage and, consequently, death.

The mortality rate observed in the present study was higher than that reported in the national data (53.9%), which included emergency units and intensive care units[15]. This high mortality rate may be explained by the fact that the emergency unit under study belongs to a highly complex hospital, which is a reference for critically ill patients cared by the Brazilian Unified Health System. Most of the patients had been referred from primary or secondary services, suggesting the need to improve the flow of critically ill patients and establish the sepsis treatment protocol at the various levels of healthcare, especially in emergency and prehospital care services.

The establishment of a quality program for the diagnosis and treatment of sepsis in Brazilian hospitals has led to a significant reduction in mortality rates (53.9 to 38.6%)[15], thus underlining the need to create strategies in order to facilitate the establishment of these programs in all health institutions.

A study conducted in a Brazilian public hospital showed that many nursing professionals had difficulties in determining signs of infection, which becomes easier as the patients progress to more severe stages, such as septic shock[20]. Therefore, early recognition of sepsis signs is paramount for the use of programs and protocols that guide the care provided to these patients.

CONCLUSION

The present study assessed the care provided to patients with sepsis in the emergency unit of a Brazilian university hospital. A high prevalence of this diagnosis was found among the patients treated, and most of them developed sepsis during hospitalization in this unit. The treatment of sepsis followed the guidelines recommended by SSC; however, it did not reach optimal levels of compliance with quality indicators. This way, it is possible to increase compliance with the recommendations, which potentially will result in reduced mortality rates.

SEPSE: AVALIAÇÃO DA QUALIDADE DO ATENDIMENTO EM SETOR DE URGÊNCIA E EMERGÊNCIA

RESUMO

Introdução: A sepse é uma condição grave causada por resposta imune desregulada a uma infecção e é considerada uma das principais causas de morte no mundo. **Objetivo:** Avaliar a qualidade do atendimento ao paciente séptico no setor de urgência e emergência de um hospital universitário, conforme as diretrizes preconizadas pela *Surviving Sepsis Campaign*. **Métodos:** Estudo longitudinal, realizado com pacientes sépticos em um setor de urgência e emergência. Os dados foram coletados nas notificações de sepse e prontuários. A análise estatística foi realizada por medidas de tendência central e regressão logística binária. **Resultados:** Foram avaliados 139 pacientes na perspectiva da *Surviving Sepsis Campaign*. A adequação das condutas relacionadas às coletas de exames atingiu 64,2% para o lactato e 55,3% para hemoculturas. Receberam terapia antimicrobiana na primeira hora 49,6% dos pacientes. Não houve adesão ao tratamento da hipotensão e hiperlactatemia em 69,8% dos casos. A mortalidade atingiu 61,2% dos casos e os fatores de risco associados foram: múltiplas disfunções orgânicas; pontuação elevada nos escores APACHE II e SOFA; hiperlactatemia; e ventilação mecânica. **Conclusão:** O atendimento ao paciente com sepse no setor de urgência e emergência seguiu a maioria das diretrizes da *Surviving Sepsis Campaign* ; porém, é possível aumentar a adesão às recomendações, resultando em melhores prognósticos.

Palavras-chave: Sepse. Epidemiologia. Mortalidade. Serviço hospitalar de emergência.

SEPSIS: EVALUACIÓN DE LA CALIDAD DE LA ATENCIÓN EN UNA UNIDAD DE URGENCIAS Y EMERGENCIAS

RESUMEN

Introducción: la sepsises una condición grave causada por respuesta inmune desregulada a una infecciónyes considerada una de las principales causas de muerte en el mundo.**Objetivo:**evaluar la calidad de la atención al paciente séptico en unidad de urgenciasy emergencias de un hospital universitario, segúnlas directrices previstas por la *Surviving Sepsis Campaign*. **Métodos:**estudio longitudinal, realizado con pacientes sépticos en unidad de urgenciasy emergencias. Los datos fueronrecolectados en las notificaciones de sepsisylos registros médicos. El análisis estadístico fue realizado por medidas de tendencia central y regresión logística binaria. **Resultados:**fueronevaluados 139 pacientes en la perspectiva de la *Surviving Sepsis Campaign*. La adecuación de las conductas relacionadas a las recolecciones de exámenes alcanzóel 64,2% para el lactato y el 55,3% para hemocultivos. Recibieron terapia antimicrobiana en la primera hora el 49,6% de los pacientes. No hubo adhesión al tratamiento de la hipotensión e hiperlactatemia enel 69,8% de los casos. La mortalidad alcanzó el 61,2% de los casos ylos factores de riesgo asociados fueron: múltiples disfunciones orgánicas; puntuación elevada en los scores APACHE II ySOFA; hiperlactatemia; y ventilación mecánica. **Conclusión:**la atención al paciente con sepsisen el sector de urgenciasy emergencias siguióla mayoría de las directrices de la *Surviving Sepsis Campaign*; pero, es posible aumentar la adhesióna las recomendaciones, resultando en mejores pronósticos.

Palabras clave: Sepsis. Epidemiología. Mortalidad. Servicio hospitalario de urgencias.

REFERENCES

1. Torio CM, Moore BJ. National inpatient hospital costs: the most expensive conditions by payer, 2013. Statistical brief #204. Healthcare Cost and Utilization Project (HCUP) [Internet]. Agency for Healthcare Research and Quality: Rockville; 2016. [cited 2019 Nov 15]. Available from: https://www.ncbi.nlm.nih.gov/pubmed/27359025

2. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, et al. The Third International Consensus definitions for sepsis and septic shock (Sepsis-3). JAMA. 2016;315(8):801-10. doi: 10.1001/jama.2016.0287

3. Rhodes A, Evans LE, Alhazzani W, Levy MM, Antonelli M, Ferrer R, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock: 2016. Intensive Care Med. 2017;43(3):304-377. doi: 10.1007/s00134-017-4683-6

4. Kaukonen KM, Bailey M, Suzuki S, Pilcher D, Bellomo R. Mortality related to severe sepsis and septic shock among critically ill patients in Australia and New Zealand, 2000-2012. JAMA. 2014;311(13):1308-16. doi: 10.1001/jama.2014.2637

5. Levy MM, Rhodes A, Phillips GS, Townsend SR, Schorr CA, Beale R, et al. Surviving Sepsis Campaign: association between performance metrics and outcomes in a 7.5-year study. Crit Care Med. 2015;43(1):3-12. doi: 10.1097/CCM.0000000000000723,

5. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, et al. The Third International Consensus definitions for sepsis and septic shock (Sepsis-3). JAMA. 2016;315(8):801-10. doi: 10.1001/jama.2016.0287

6. Seymour CW, Gesten F, Prescott HC, Friedrich ME, Iwashyna TJ, Phillips GS, et al. Time to Treatment and Mortality during Mandated Emergency Care for Sepsis. N Engl J Med. 2017 Jun 8;376(23):2235-2244. doi: 10.1056/NEJMoa1703058

7. Carvalho RT, Parsons HA. Manual de cuidados paliativos ANCP: ampliado e atualizado, 2ª ed. Academia Nacional de Cuidados Paliativos: Rio de janeiro; 2012.

8. Hospital Universitário de Londrina. Relatório Anual da Seção de Estatística - Divisão de Serviço de Arquivos Médicos - Diretoria Clínica do Hospital Universitário de Londrina. Hospital Universitário de Londrina; 2015.

9. Instituto Latino Americano de Sepse (ILAS). Implementação de protocolo gerenciado de sepse. Protocolo clínico. Atendimento ao paciente adulto com sepse e choque séptico [Internet]. 2018. [citado em 2019 fev 12]. Disponível em: https://www.ilas.org.br/assets/arquivos/relatorio-nacional/relatorio-nacional-final.pdf

10. Huang YQ, Gou R, Diao YS, Yin QH, Fan WX, Liang YP, et al.

Charlson comorbidity index helps predict the risk of mortality for patients with type 2 diabetic nephropathy. J Zhejiang Univ Sci B. 2014;15(1):58-66. doi: https://doi.org/10.1631/jzus.B1300109

11. Yoon JC, Kim YJ, Lee YJ, Ryoo SM, Sohn CH, Seo DW, et al. Serial evaluation of SOFA and APACHE II scores to predict neurologic outcomes of out-of-hospital cardiac arrest survivors with targeted temperature management. PLoS One. 2018;13(4):e0195628. doi: https://doi.org/10.1371/journal.pone.0195628

12. Cols EM, Reniu AC, Ramos DR, Fontrodona GP, Romero MO. Manejo de la sepsis grave y el shock séptico en un servicio de urgencias de un hospital urbano de tercer nivel. Emergencias [Internet]. 2016 [citado 2019 Feb 10];28(4):229-34. Disponible en: https://dialnet.unirioja.es/servlet/articulo?codigo=5595919

13. Pérez-Moreno MA, Calderón-Hernanz B, Comas-Díaz B, Tarradas-Torras J, Borges-As M. Análisis de la concordancia del tratamiento antibiótico de pacientes con sepsis grave en urgencias. Rev Esp Quimioter. [Internet]. 2015 [citado 2019 Feb 10];28(6):295-301. Disponible en: https://seq.es/resumen-del-articulo/resumen-articulo-2015/rev-esp-quimioter-2015286295-301/

14. Novosad SA, Sapiano MRP, Grigg C, Lake J, Robyn M, Dumyati G, et al. Vital signs: epidemiology of sepsis: prevalence of health care factors and opportunities for prevention. MMWR Morb Mortal Wkly Rep [Internet]. 2016 [cited 2019 Feb 15];65(33):864-9. Available from: https://www.cdc.gov/mmwr/volumes/65/wr/mm6533e1.htm

15. Machado FR, Ferreira EM, Sousa JL, Silva C, Schippers P, Pereira A, et al. Quality Improvement Initiatives in Sepsis in an Emerging Country: Does the Institution's Main Source of Income Influence the Results? An Analysis of 21,103 Patients. Crit Care Med. 2017;45(10):1650-1659. doi: http://dx.doi.org/10.1097/CCM.0000000000002585

16. Palomba H, Corrêa TD, Silva E, Pardini A, Assuncao MS. Comparative analysis of survival between elderly and non-elderly severe sepsis and septic shock resuscitated patients. Einstein (Sao Paulo). 2015;13(3):357-63. doi: http://dx.doi.org/10.1590/S1679-45082015AO3313

17. Barros LLS, Maia CSF, Monteiro MC. Fatores de risco associados ao agravamento de sepse em pacientes em Unidade de Terapia Intensiva. Cad Saúde Colet. 2016;24(4):388-96. doi: http://dx.doi.org/10.1590/1414-462x201600040091

18. Hayden GE, Tuuri RE, Scott R, Losek JD, Blackshaw AM, Schoenling AJ, et al. Triage sepsis alert and sepsis protocol lower times to fluids and antibiotics in the ED. Am J Emerg Med. 2016;34(1):1-9. doi: http://dx.doi.org/10.1016/j.ajem.2015.08.039

19. Femling J, Weiss S, Hauswald E, Tarby D. EMS patients and walk-in patients presenting with severe sepsis: differences in management and outcome. South Med J. 2014;107(12):751-6. doi: https://doi.org/10.14423/SMJ.0000000000000206

20. Souza ALT, Amário APS, Covay DLA, Veloso LM, Silveira LM, Stabile AM. Conhecimento do enfermeiro sobre o choque séptico. Cienc. Cuid. Saúde. 2018;17(1). doi: https://doi.org/10.4025/cienccuidsaude.v17i1.39895

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