HOSPITAL MORBIDITY AND MORTALITY BY SEPSIS IN THE UNIQUE HEALTH SYSTEM

MORBIMORTALIDADE HOSPITALAR POR SEPSE NO SISTEMA ÚNICO DE SAÚDE

LA MORBILIDAD Y LA MORTALIDAD HOSPITALAR POR SEPSIS EN EL SISTEMA ÚNICO DE SALUD

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ABSTRACT

Objective: to define the profile of hospital morbidity and mortality by sepsis in the Unified Health System (SUS). Method: documentary research with a quantitative approach, based on data of the Department of Computer of the Unified Health System / Brazil. The cases of sepsis, 2005 to 2009, in the Northeast, were associated with population estimates from the Brazilian Institute of Geography and Statistics (IBGE) to determine incidence rates, mortality and lethality. The data analysis was by quantitative approach and placed on a table and figures according to the age and the annual impairment. Results: occurred 55,759 cases of sepsis in the Northeast, 20,334 of whom died. The incidence per 100,000 inhabitants was 21.32 cases, and the mortality rate was 7.78 deaths. Conclusion: assistance to combat sepsis in the region has not been effective, since high mortality rates observed in most age groups associated with high rates of incidence and mortality. Descriptors: Sepsis; Infection; Program Infection Control.

RESUMO

Objetivo: traçar o perfil da morbimortalidade hospitalar por sepsis no Sistema Único de Saúde. Método: pesquisa documental, com abordagem quantitativa, a partir de dados do departamento de informática do Sistema Único de Saúde/Brasil. Os casos de sepsis, 2005 a 2009, na região Nordeste, foram associados às estimativas populacionais do Instituto Brasileiro de Geografia e Estatística para determinar as taxas de incidência, mortalidade e letalidade. A análise dos dados foi mediante enfoque quantitativo e disposto em figuras e uma tabela de acordo com a faixa etária e acometimento anual. Resultados: ocorreram 55759 casos de sepsis na região Nordeste, dos quais 20334 foram óbitos. A incidência por 100.000 habitantes foi de 21,32 casos, enquanto a mortalidade foi de 7,78 óbitos. Conclusão: a assistência para o combate da sepse na Região não está sendo efetiva, uma vez que verificou altas taxas de letalidade na maioria das faixas etárias associada às altas taxas de incidência e mortalidade. Descriptores: Sepsis; Infecção Hospitalar; Programa de Controle de Infecção Hospitalar.
INTRODUCTION

In the XXI century in which the heyday of scientific and technological development permeates the major part of the health and provides preventive actions, preventive, curative and palliative increasingly appropriate the possible pathological situations, we are faced with epidemiological indices fleeting the expectation of welfare.

This modernization of health directly affects the incidence, prevalence and mortality of diseases, such as sepsis. This disease, which results from a complex interaction between the infectious agent and the immune response, pro-inflammatory and procoagulant host, which 50 years was responsible for a high demand of deaths.\(^{1,3}\)

The presence of antibiotics and the development of greater knowledge regarding the pathophysiological mechanism of sepsis allowed a more adequate health care, increasing the chances of a cure.\(^{4}\) However this condition is still a major cause of morbidity and mortality worldwide\(^{5,7}\), presenting itself as a major cause of nosocomial infection and accounts for most admissions to the Intensive Care Units (ICU).\(^{3,8,9}\)

Sepsis is characterized as a problem of Public Health in Brazil due to the increasing number of cases, high mortality and high cost of treatment it demands.\(^{10-12}\) However, the reality of the involvement of the same, is still unclear, since the development of descriptive epidemiological studies and is incipient, but some data such as those from a survey conducted in ICUs of Santa Catarina and São Paulo as the result showed that the occurrence of sepsis in 46.9% of patients, with incidence of 61,4 per 1000 patients / day and 33.9% mortality.\(^{11}\)

A later study conducted in 75 ICUs in Brazil with a sample of 3.128 patients showed the incidence of sepsis with a mortality of 16,7% and 46.6%, ie about half of the people killed by this evil. These results are superior to those reported in publications European and North American locations that are considered to have one of the best assists healing.\(^{13}\) The data shown are reaffirmed when the information is verified by the researcher Fernando Zanon that brings high incidence of sepsis and an overall ICU mortality of 31,1% and on day 28 after study enrollment of 34.6%.\(^{14}\)

Despite all efforts, control of sepsis still can not be reached, because even with the heyday of science and technology which has provided significant advances in understanding its pathogenesis, with a better understanding of the mechanisms of activation of airway inflammation and coagulation , treatment with the development of new drugs, and recommendation for the use of evidence-based protocols\(^{12,15,16}\) were not enough to contain this disease in Brazil.

This lack of control when the onset of sepsis is the result of a treatment that requires sophisticated equipment, high cost medications, skilled labor and appropriate clinical management, requiring a high financial support. However, how to reduce this injury in Brazil, there are few studies to identify as is the reality of the country and the gaps in care? This requires that research showing the involvement of sepsis in Brazilian regions, so be prepared to meet the problems that emerge in control of sepsis, as well as help to trace solutions to this problem.

The unrest in this subject arose from the magnitude of sepsis in the Northeast, which presents itself as one of the regions most affected by this type of injury to health, having one of the highest mortality rates in the country. Therefore, this proportion is as firm concern in view that efforts become engaged before the minor dimension of the problem in Brazil. Thus, such studies may contribute to the spread of knowledge based on regional epidemiological aspects and may serve as a subsidy to the development of health policies and actions appropriate to the reality installed in the Northeast. Given the above, the following question arose << What will the hospital morbidity and mortality due to sepsis of the Unified Health System (SUS) in the Northeast? >>

To answer such questions, the objective of this study is to outline the profile of hospital morbidity and mortality from sepsis in unified health system.

METHOD

The study consists of desk research, quantitative approach with the secondary data obtained from the DATASUS\(^{18}\) with the following methodological approach:

1. Health Information  
2. Epidemiology and Morbidity  
3. Hospital Morbidity SUS - General  
4. By place of residence (that for all cases of sepsis identified according to ICD-10)  
5. Period from 2005 to 2009, which were associated with population estimates from the Brazilian Institute of Geography and Statistics (IBGE)\(^{19}\) in the same period, residents in the
Northeast, so to determine incidence rates, mortality and lethality. The choice of this period is justified by the current theme of the last five years, since in 2010 the data were not fully consolidated by the information system and the collection would have been held in the month of October 2010.

The northeast is a region which has an area of 1,554.257 km² with a population of 51,871,449 people, according to the Census of 2010\(^{17}\), which is being offered by tertiary care public hospitals that have a major problem as sepsis.

To better understand the situation of the involvement of sepsis in the Northeast, the data were analyzed according to the variables of age and impairment annually and are presented in a table and pictures.

**RESULTS**

Through the analysis of secondary data we found that during the period 2005 to 2009, there were a total of 55,759 cases of sepsis in the Northeast of Brazil, of which 20,334 died.

The incidence rate per 100,000 over the five years was 21,32 cases, with 2005 the year with the highest rate (24,14 cases), while in 2008 the lowest (19,30 cases) (Figure 1). Already in the mortality rate, there is a total of 7,78 deaths per 100,000 population, which in 2007 had the highest rate (9,04 deaths) and 2008 the lowest (6,23 deaths) (Figure 2).

![Figure 1: Development of the incidence rate in the period 2005 to 2009.](image1)

![Figure 2: Development of the mortality rate in the period 2005 to 2009.](image2)

It is worth noting that when examined incidence rates and mortality, it is noted that both had the same swing during the development period. However, in 2009 there is a reduction of 13,96% in the incidence rate of 11,39% and the mortality rate compared to 2005.

In terms of lethality, his total during the period was 36,47%, highest performing in 2006 (41,19%) and lowest in 2008 (32,31%) annually always remained above 30%. It is also observed fluctuations in its development during the five years, ending the period with an increase of 2,89% (Figure 3).
When performed the analysis of incidence by age group (Table 1), we note that the range less than one year was more frequent during the period, with 296.47 cases per 100,000 inhabitants, followed by aged 80 years and over, had an incidence of 148.13 cases per 100,000 inhabitants.

Regarding mortality, one can observe a similar development, being aged 80 years and more with the highest rate (94.02 deaths) followed by the band under one year (76.28 deaths).

Despite the high incidence and mortality rate of less than one year range, and even its lethality was relatively high (25.73%), draws attention to the continuing increase in the values of observed mortality from the age group 5 to 9 years, going from 13.48% to 63.47%, of which we highlight the tracks had higher mortality to 50%, as can be seen in Table 1.

### Table 1. Distribution rates Incidence, Mortality and lethality of sepsis by age group in the Northeast during the period from 2005 to 2009.

<table>
<thead>
<tr>
<th>Age</th>
<th>Incidence</th>
<th>Mortality</th>
<th>Lethality</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1</td>
<td>296.47</td>
<td>76.28</td>
<td>25.73%</td>
</tr>
<tr>
<td>1 a 4</td>
<td>24.32</td>
<td>4.01</td>
<td>16.49%</td>
</tr>
<tr>
<td>5 a 9</td>
<td>8.90</td>
<td>1.20</td>
<td>13.48%</td>
</tr>
<tr>
<td>10 a 14</td>
<td>6.28</td>
<td>1.11</td>
<td>17.72%</td>
</tr>
<tr>
<td>15 a 19</td>
<td>5.33</td>
<td>1.29</td>
<td>24.13%</td>
</tr>
<tr>
<td>20 a 29</td>
<td>6.01</td>
<td>1.70</td>
<td>28.23%</td>
</tr>
<tr>
<td>30 a 39</td>
<td>7.74</td>
<td>2.85</td>
<td>36.81%</td>
</tr>
<tr>
<td>40 a 49</td>
<td>13.61</td>
<td>5.68</td>
<td>41.75%</td>
</tr>
<tr>
<td>50 a 59</td>
<td>24.77</td>
<td>11.40</td>
<td>46.03%</td>
</tr>
<tr>
<td>60 a 69</td>
<td>41.00</td>
<td>20.95</td>
<td>51.10%</td>
</tr>
<tr>
<td>70 a 79</td>
<td>74.61</td>
<td>43.51</td>
<td>58.31%</td>
</tr>
<tr>
<td>80 e +</td>
<td>148.13</td>
<td>94.02</td>
<td>63.47%</td>
</tr>
<tr>
<td>Total</td>
<td>21.32</td>
<td>7.78</td>
<td>36.47%</td>
</tr>
</tbody>
</table>

### DISCUSSION

The onset of sepsis in the Northeast is still uncontrolled. As much as evaluation of the impact in five years show that there has been a reduction in disease incidence in this population in the Northeast, to evaluate the Figure 1 it is clear that the actions assists whether preventive or prophylactic, are not going to meet the real needs of the population, because there is no constancy in the data, but, due to the oscillations solving specific problems.

The Mortality in turn, appeared high, and at the end of five years, was reduced. However it reflects the concomitant decrease in the incidence of sepsis and non improvements in curative, since high values of lethality observed during the whole period.

Another trait was the involvement of sepsis by age group, which showed a disease with high incidence in the age group less than a year and 80 years and over, compared to the other age groups analyzed (Table 1).

This result draws attention, because this is the age group at risk for sepsis, which should be the knowledge of health professionals and is this fact related to the immunological impairment in these stages of development.

Admittedly these age groups could actually present a higher incidence others, but as noted in Table 1, there is a discrepancy between the values identified in less than one year and 80 years old and over, compared to
other age groups. Furthermore, it is important to mention that after 40 years old the incidence begins to increase and reaches a peak in 80 years old and more, reaching a 2-fold higher occurrence the previous age group, which demonstrates the need for improvements to reduce welfare the incidence of sepsis in the ranges of risk because we know that this population is the most incident. Thus, it is necessary to carry out stringent infection control actions at that time mainly development.

The Northeast region has a high proportion of elderly people, similar to what occurs in the more developed regions of Brazil, in addition, they are more susceptible to getting sick, having higher risk of severe disease. Therefore, these factors contribute to the high incidence of sepsis in the age group of 80 years and more, as reported in this study.

This involvement of sepsis is not something restricted to the Northeast or the other Brazilian regions, a study conducted in the United States, which assessed the epidemiological changes of the involvement of sepsis in a period of 22 years showed a higher incidence of involvement of sepsis in the elderly and also an increase in the average age of affected patients, increased from 57,4 to 60,8.

As for the high incidence of sepsis in children under one year of which was found in this research is valid emphasizes that this characteristic was also observed in a study conducted in the period of one year, in a Neonatal Intensive Care Unit of St. Paul, where the sepsis was identified as the most common infection, accounting for 54% of newborns admitted.

The age ranges of risk for sepsis were also by far with the highest mortality rates, where the most affected was 80 years old and then more of less than one year, it is important to mention that even if there is a high incidence of a lesser one year mortality observed in this same age group is much smaller, which shows a better control of this disease at that time.

Mortality rates, similar incidence rates declined steeply after the age less than a year until the age group 30-39 years, returning later to grow, which shows high concern about curative care that is being provided, that even in the midst of high scientific and technical knowledge existing about sepsis deaths cannot control, after 40 years of age.

Concern that this is the largest observed lethality, because though mortality is present in low aged less than one year to 30-39 years old, mortality is high, increasing progressively after 39 years old, leaving more than 50 % from age 60 to 69 years old. Making clear the ineffectiveness in curative care provided.

It is important to note that in 2008, the Health System in Brazil completed twenty years of operation, with the further development and implementation of actions to health this year by states and municipalities, further emphasizing the control of various diseases as one of priorities of the Covenant for Life.

Before the context it is worth noting that health indicators in 2008 were probably influenced by a greater prioritization of financial resources in the health sector by the federal, state and local, to intensify efforts to organize services, provide material resources and strengthen the improvement of quality of life through the development of strategies and actions on health.

Therefore, this research points to the existence of problems that must be solved, thereby enabling improvements in health indicators. Any way, it is important that future studies be in the states that comprise the Northeast and go until you reach tapering Hospitals and professionals who are working to combat and control of sepsis, thus to really identify the critical nodes that afflict assistance.

**CONCLUSION**

It was possible to profile hospital morbidity and mortality due to sepsis of the National Health System in the Northeast from 2005 to 2009. It is considered that given the data presented, the hospital care developed in those five years to combat sepsis in the Northeast, cannot intervene effectively on incidence, mortality, and especially mortality from this disease.

Clearly the gap between scientific knowledge and practical application, once again, that until the age of risk for developing sepsis is on the rise in health indicators studied. Moreover, when combining the incidence rate, mortality rate and mortality, it is identified that in years when the amount of people committed to sepsis possessed low value, the chance of dying was high, indicating that further curative care is insufficient.

Managers of health SUS have to pay attention to this information and seek to identify what is occurring in hospital care, which is acting negatively in combating sepsis and providing data worrying about your involvement in the Northeast.
REFERENCES


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