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MORTALITY INDEX FROM INFECTIONS RELATED TO HEALTH CARE AT THE REFERENCE HOSPITAL OF CACOAL-RO IN THE YEAR 2021

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Abstract: Health care-related infections (HAI), popularly known as nosocomial infections, are an important cause of hospital morbidity and mortality. The objective of this study is to analyze the mortality due to HAI in the referral hospital in Cacoal, Rondônia. The methodology consists of a quantitative retrospective cross-sectional observational study, analyzing patients notified by HAI in the Hospital Infection Control Commission of the Cacoal Reference Hospital in 2021, including patients over 18 years of age and analyzing the evolution, types of infections and notified etiological agents. There were 161 cases, of which 58 were ventilator-associated pneumonia, 48 were urinary tract infections, and 35 were bloodstream infections. Of the 138 patients, 70 died and 68 were discharged from the episode. The case fatality rate was high, reaching 50.72%. Despite this, it follows the pattern of other institutions in the country. Thus, the problem of HAI in the hospital environment is noted, reinforcing the need for measures to prevent and control such infections.
Keywords: Hospital infection; Mechanical Ventilation Associated Pneumonia; Catheter Related Infections.

INTRODUCTION

Health care-related infections (HAIs) are defined as adverse infectious events that occur during the care process offered to patients in the hospital environment, which can be avoided with the implementation of preventive measures and effective infection control (ANVISA), 2021). Often, they occur due to a disharmony between the normal microbiota and the patient's immune system (MOURÃO; CHAGAS, 2020).

IRAS are a serious health care support problem, since they interfere with hospital morbidity and mortality and negatively influence the safety and quality of the care services available (ANVISA, 2021). In the United States, healthcare-associated infections are the sixth leading cause of death in the country (LIU; DICKTER, 2020). In addition, the daily cost of a patient with HAI was 55% higher than that of a patient without HAI, being a source of high costs (ANVISA, 2021).

Since the 18th century, there was concern about the spread of diseases, but as the population's knowledge about microorganisms was low, and hospitals were precarious and with poor hygiene conditions, there was the spread of pathogens among patients. The 19th century was revolutionary in discoveries in microbiology, contributing to the prevention of nosocomial infections (FONTANA, 2006).

Given the clinical importance of the development of infections in Brazil, in the 1980s the Hospital Infection Control Commissions (CCIHs) were created. Currently, they are mandatory in all national hospitals, regardless of their size and structure, with the function of reducing the incidence and severity of HAIs (MOURÃO; CHAGAS, 2020).

The main examples of HAIs are surgical site infections (SSI), ventilator-associated pneumonia (VAP), catheter-associated urinary tract infections (UTITUs) and venous catheter-associated bloodstream infections (IPCS) (LIU). ; DICKTER, 2020).

Ventilator-associated pneumonia (VAP) is a very prevalent nosocomial infection in the intensive care sector (DALMORA, 2013). The estimated percentage of mortality from VAP approaches 10%, being higher in surgical patients in the ICU (PAPAZIAN, 2020).

Infections related to the use of central venous catheters (IPCS) are primary blood infections associated with the use of central venous access (ANVISA, 2017). Furthermore, they are related to high morbidity and mortality, which is around 40% in Brazil (ANVISA - National Health Surveillance Agency, 2017).

Urinary tract infection (UTI) is defined as the presence in the urine sample of one or more pathogenic microorganisms, with clinical signs or symptoms, related or not to the indwelling urinary catheter (SVD) procedure (ANVISA, 2021). In the hospital environment, ITUACs represent about 30-50% of HAIs, being the most common cause of nosocomial infection (SIQUEIRA; BARBOSA; TENÓRIO, 2021).

The objective of this article is to elucidate the mortality rate regarding HAI at the Regional Hospital of Cacoal-RO in 2021, demonstrating the main forms of hospital infections, the etiological agents of HAI and its evolution.

METHODOLOGY

The research is configured as a quantitative retrospective cross-sectional observational study, with a convenience sample by typing, which encompasses all patients hospitalized at the Regional Hospital of Cacoal (HRC) notified by HAI in 2021, without specification regarding social factors. Exclusion criteria were patients admitted to the HRC without HAIs, or those notified by HAIs under 18 years of age or in years other than those proposed by the research.

The research was carried out in the CCIH sector of the HRC in Cacoal, Rondônia, with authorization from the general management of the Hospital and approval by the Research Ethics Committee of the Centro Universitário Maurício de Nassau de Cacoal - Uninassau Cacoal. CAAE: 59110822.1.0000.5298.

The data collected refer to the type of infection related to health care, the pathogen identified in culture and the evolution of the case, whether discharged or died.

RESULTS

Analyzing the collected data, we obtained a total number of 161 cases of HAI in the year 2021, with 58 (36%) pneumonia associated with mechanical ventilation, 48 (30%) urinary tract infections, 35 (22%) bloodstream, 13 (8%) surgical site infections, 4 (2.5%) pressure injuries, 1 (0.62%) primary bloodstream infection, and 1 (0.62%) soft tissue infection.

The month with the highest number of HAIs was July, with 33 (20%) cases and the lowest were January and February, with 3 (1.9%) cases each. Of the 161 reported cases, 117 (84.8%) patients had only one HAI condition and 21 (15.2%) had multiple. Of these 138 patients involved in the research, 70 (50.7%) died, 67 (48.5%) were discharged and 1 (0.7%) evaded.

The etiological agents involved are: *Klebsiella spp.; Escherichia coli; Pseudomonas; Acinetobacter spp; Staphylococcus aureus; S. negative coagulase; Enterobacter; Enterococcus faecalis*.

Of the UTIs, 20 (41%) had the following pathogens:Klebsiella spp., 17 (35,4%) the *Escherichia coli*, 6 (12,5%) the *Acinetobacter spp.*, 4 (8%) *Pseudomonas* and 1 (2%) *Enterobacter.*

Of the VAPs, in 32 (55.2%) cases, the etiologic agent was Acinetobacter spp., 15 (25,8%) were *Klebsiella spp*., 7 (12%) were Pseudomonas, and 4 (6%) had no culture. Of the ISCs, 2 (15,4%) were *Staphylococcus aureus*, 1 (7,6%) *Acinetobacter spp,* 1 (7,6%) *Escherichia coli and 9 (69.2%) had no culture.*

Of the ICSs, 8 (22.8%) were *Acinetobacter spp*, 7 (20%) were *S. negative coagulase*, 6 (17,1%) were *Pseudomonas*, 5 (14,2%) were *Klebsiella spp*, 4 (11,4%) was *Staphylococcus aureus*, 2 (5,7%) *Enterococcus faecalis*, 2 (5,7%) *Enterobacter* and 1 (2,8%) without culture.

DISCUSSION

The mortality rate obtained from HAI cases at the Cacoal Regional Hospital was 50.72%, evidencing the severity of these conditions. Comparing with other locations, the study

by SANTOS, et. al. showed 50% of death in the ICUs of Teresina-PI in 2014. In Goiás, in 2021, 66.7% of those with HAI died in the hospital analyzed by LEAL and VILELA. On the other hand, 14.3% was the rate obtained in the study by MIRANDA, CAMPOS and VIEIRA, referring to hospitals in Belém do Pará in 2011, showing a significant difference.

In 2017, the National Health Surveillance Agency showed an overall incidence of HAI in an adult Intensive Care Unit of 4.4%. The most significant rates were PAVM with 11.50%, ITU with 4.70% and IPCS with 4.40% (ANVISA, 2018). Comparatively, in Rondônia, from January to September 2021 in the adult ICU, the incidence density was 5.6% of IPCS, 14.4% of VAP and 6.3% of UTI (ANVISA, 2022).

Infections related to breathing were the most prevalent, which follows the pattern of other evidence (SANTOS, et. al., 2016). However, the most common agent was the *Acinetobacter spp.*, which differs from the study carried out by SANTOS in 2016 in an Intensive Care Unit in Piauí, which found Pseudomonas aeruginosa as the most prevalent.

In our study, the most frequent microorganism was *Acinetobacter spp*. In the study by LEAL, M.V and VILELA, A. A. F., the most common etiological agent was *Klebsiella pneumoniae*. A *Pseudomonas aeruginosa* was the protagonist in the analysis of MIRANDA, CAMPOS and VIEIRA and also in that of SANTOS, et. al.

According to the report of the state of Rondônia, from January to September 2021, made available by ANVISA (National Health Surveillance Agency), *Staphylococcus* negative coagulase was the most reported in IPCSL, followed by *Acinetobacter spp*. and in UTI, *Escherichia coli*, followed by *Klebsiella pneumoniae* (ANVISA, 2022 In our work, the main ones were *Klebsiella spp* em ITU and *Acinetobacter spp* in ICS.

Studies have shown that more than 70% of certain infections can be reduced when health workers recognize the problem of HAIs and act in accordance with measures for the prevention and control of infections (ANVISA, 2021).

In this context, interventionist strategies, known as "bundles", were developed, focused on the way in which the care is offered to the patient, and which are increasingly disseminated and studied. These packages of hospital measures include three to five care, based on scientific studies, with the aim of improving the clinical condition of the patient, the work process and a correct execution of the services offered, with the aim of reserving to the user of the health system efficient care, reducing the occurrence of complications (SILVA, 2017).

CONCLUSION

After the data analyzed, it is concluded that infections related to health care constitute a major public health problem in the country. The levels of mortality from HAI are alarming, since more than half of the reported patients died in the year 2021 in Cacoal.

In addition, the data show compliance with other locations, demonstrating a national pattern of this problem, which in addition to generating costs, is a high source of mortality and morbidity.

Thus, the need to adopt prevention and control measures for such infections is reinforced, as well as rigorous monitoring of their effectiveness, as they consist mainly of simple actions, such as hand washing. Thus, by the values presented in this study, a greater focus must be given to this reality, in order to improve the quality of health care in the country.

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