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CROSS INFECTION IN INTENSIVE CARE UNITS

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ABSTRACT

No health care is free of risks and possible adverse events that may occur to those who undergo such care. Among the possible complications resulting from health care, cross infection (CI) stand out. Its incidence is higher in developing countries, where problems with human resources, technical expertise and laboratory support hinder infection control policies. Many individuals become susceptible to infections within a hospital setting, especially those patients admitted to Intensive Care Units (ICUs) where invasive procedures are routine. CI still appear as a frequent complication in hospitalized patients and in ICUs this occurrence may be even higher, since invasive procedures are maintained longer and the patient has a higher chance of colonization. The consequences of CI may become more pronounced when the etiological agents have an antimicrobial resistance profile. The World Health Organization (WHO) together with the Brazil's National Health Surveillance Agency (ANVISA) have been encouraging studies on the different repercussions of CI related to bacterial resistance. Some authors report that one of the first steps for planning actions and implementing effective institutional policies for the prevention and control of CI is to know its profile in the institutions.

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INTRODUCTION

It is well known that due to some diseases, individuals need hospitalization for treatment, cure and rehabilitation. However, no health care is free of risks and possible adverse events that may occur to those who undergo such care. Among the possible complications resulting from health care, cross infections (CI) stand out. Cross infections represent a threat to hospitalized patients worldwide.

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Its incidence is higher in developing countries, where problems with human resources, technical expertise and laboratory support hinder infection control policies. Traditionally, the occurrence of CI has been attributed to patient weaknesses, invasive procedures, and use of antimicrobials, among other work processes (CALDEIRA et al., 2015). In this context, Gaspar, Busato and Severo (2012) report that many individuals become susceptible to infections within a hospital environment, especially those patients admitted to Intensive Care Units (ICUs) where invasive procedures are routine.

Ordinance 2,616 of 05/12/1998 conceptualizes nosocomial infection as that acquired after the client's admission to the hospital and is manifested during hospitalization or after discharge, provided that it may be related to hospitalization or hospital procedures (BRAZIL, 1998). According to Jardim (2013), CI still appear as a frequent complication in hospitalized patients and in ICUs this occurrence may be even greater, since invasive procedures are maintained longer and the patient has a higher chance of colonization. Another issue pointed out is that in critical and intensive care environments, the manipulation of these devices occurs several times a day for fluid administration, nutrition, drugs, blood products, among others. In addition, critically ill patients need continuous monitoring and make use of many life-sustaining equipment. Padoveze and Fortaleza (2014) emphasize that CI have an impact on hospital lethality, length of stay and costs. The increase in conditions that induce the hospitalization of increasingly severe and immunocompromised individuals, added to the emergence of antimicrobial resistance, gives CI special relevance for public health.

Unfortunately the magnitude of the problem is "sometimes underestimated by institution managers and support for preventive actions is not always robust". The authors also point out the lack of knowledge about CI control measures, the qualification of human resources, allied to the structure inadequate physical health services as contributing factors to this scenario. (PADOVEZE; FORTALEZA, 2014). It can be stated that, due to greater organic instability, CI prevention practices should be prioritized in neonatal therapy units, due to the risk population (ROMANELLI *et al.*, 2013). Primary bloodstream infection (PBI) in neonates is still a major cause of neonatal morbidity and mortality. According to Oliveira, Oliveira de Paula and Rocha (2015), since 2010 in Brazil, PBI indicators in patients using central venous catheter (CVC) in ICUs have been compulsorily reported. The consequences of CI may become more pronounced when the etiological agents have an antimicrobial resistance profile.

The resistance of microorganisms to antimicrobials has become a growing challenge, as the therapeutic options for the treatment of some infections caused by them have been increasingly restricted (OLIVEIRA; OLIVEIRA DE PAULA; FARNETANO ROCHA, 2015). In this context, the World Health Organization - WHO has encouraged studies on the different repercussions of HAI related to bacterial resistance. In order to improve knowledge and provide support for the implementation of measures that can improve the quality of care, reduce complications and consequently provide greater patient safety. Padoveze and Fortaleza (2014) corroborate that permanent health education is essential in this challenge of controlling cross infections. Michelin and Fonseca (2018) report that one of the first steps for planning actions and implementing effective institutional policies for the prevention and control of IH is to know its profile in the institutions.

MATERIALS AND METHODS

In the literature it can be found two categories of review articles: narrative and systematic reviews (Rother, 2007). Narrative reviews are broad publications, adequate for the description and discussion of the development of a given subject, from a theoretical or contextual perspective. According to the same author (2007), they do not indicate the sources of information used, the methodology for searching for

references or the criteria used in the evaluation and selection of studies. This type of review is used to describe the highest level of development of a particular subject. It makes possible to acquire and update knowledge about a particular topic in a short period of time (Botelho *et al.*, 2011). The data research was carried out in the Virtual Health Library (VHL) in May 2019. The descriptors used were: cross infection, intensive care units and infection control.

Narrative Review

Little is discussed about the importance of epidemiological surveillance in hospital units. Considering that Meneguetti *et al* (2015) report that CI are of great relevance, as they increase morbidity and mortality rates, extend the length of stay of patients in the hospital and, consequently, burden treatment costs. For Alves and Lacerda (2015) consider that the control of CI is inserted among the parameters of health care evaluation, being still a paradigm of the quality of care in hospitals. In Brazil, data on CI are poorly disclosed. Moreover, these data are not consolidated by many hospitals, which makes it difficult to know the real dimension of the problem (GASPAR; BUSATO; SEVERO, 2012). Thus, it is believed that this research may contribute to further discussions regarding the control of CI within the teaching hospital which this project has as the research scenario. It is also believed that this study will contribute to the implementation of educational strategies aimed at the qualification of care practices by health teams working in sectors where CI surveillance occurs.

In order to plan and implement measures for the prevention and control of IH, it is extremely important to identify the determinants and risk factors related to infections in order to characterize the epidemiological profile. Nogueira Junior *et al* (2014) reveal the challenge of training and organizing CI surveillance teams. Hospitals are legally required to establish nosocomial infection control committees (NICC). However, it is necessary that the NICC be a model of surveillance of CI, through the results of this research, which can contribute to research and extension, starting with the establishment of protocols to minimize the number of CI. Studies are needed to provide a diagnosis of the characteristics of infection control services in Brazil. This diagnosis is essential for guiding and implementing a national surveillance system, respecting the different levels of health service development in the various regions of the country. Data from this surveillance need to be generated, analyzed and published so that approaches are systematically planned. Aiming to establish actions based on real information and not just on international data. The country has its specificities and continuous monitoring of CI is a strategic requirement for prevention. (NOGUEIRA JUNIOR *et al.*, 2014).

However, this research is justified by the importance of the theme being disseminated in the means of training of health professionals and academic communication, especially in nursing, as these are those who perform part of the invasive procedures, as well as the manipulation of these devices, including the patient himself. The importance of the theme is also justified by the pursuit of quality care with health services, promoting health and safety to patients. In view of the above, there was an interest in addressing the issue that is relevant in the current health context in which patients are increasingly susceptible to CI and microorganisms are gradually acquiring resistance to antimicrobials.

DISCUSSION

WHO as well as other international organizations and the National Health Surveillance Agency (ANVISA) recognize the CI as a phenomenon that triggers a serious public health problem of international distribution. These institutions advocate that the authorities, in their various spheres, undertake actions aimed at reducing or eliminating acquisition risks. Elimination is understood to be the maximum reduction in infectious disease caused by a specific agent in a defined geographic area as a result of deliberate efforts (CARDO *et al.*, 2010). The identification, prevention and control of CI represent fundamentals for health risk intervention before harm reaches the patient. Inserted in the context of these actions, data can be extracted and when analyzed produce information that can be used to guide both individually and collectively with a view to taking measures to prevent and intervene in the occurrence of CI. The use of epidemiology concepts to preventable events refers to the basis for timely identification. Thus, through the survey of the epidemiological profile and the establishment of the incidence rate of CI in ICUs, quality information and statistical basis for action, guided by the severity, size and scope of the infectious event, are obtained. In Brazil, epidemiological surveillance, standard precaution, isolation measures, adequate materials and equipment, environmental hygiene, identification of multidrug-resistant bacteria, adequate antibiotic therapy, staff training and implementation of control measures are important in the control of CI. (GASPAR; BUSATO; SEVERO, 2012). With this, it is possible to realize that in view of this phenomenon, it is necessary to interact with various sectors that make up a hospital. Nevertheless, Michellin and Fonseca (2018) say that in ICUs, the rates of CI tend to be higher than those found in other hospital sectors. And this is based on the severity of the underlying pathologies, the invasive procedures used over the length of hospital stay and the immunological impairment, which make patients more susceptible to infection and death. (MICHELLIN; FONSECA, 2018).

Romanelli *et al* (2013) show that in newborns (NB) the occurrence of CI is a serious event, as sepsis is one of the main causes of neonatal death, becoming one of the foci of epidemiological surveillance. Faced with CI, urinary tract infection (UTI) is one of the most prevalent and has great preventive potential (MIRANDA *et al.*, 2016). Miranda *et al* (2016) tell us that the rate of septic shock due to ICUs ranges from 20.8% to 32.9%. The most common CI in health services are surgical site infections (SSI), primary bloodstream infection (PBI), respiratory tract infection, usually mechanical ventilation-associated pneumonia, urinary tract infection (UTI), among others. SSI ranks 3rd among CI, comprising 14 to 16% of those found in hospitalized patients. Studies estimate that these can be avoided in up to 60% of cases (BRAZIL, 2017). In Brazil, the Surveillance and Control of Pathogens of Epidemiological Importance (SCOPE) pointed to a 40% mortality rate among patients with bloodstream infection (MARRA *et al.*, 2011). PBI is one of the most relevant CIs due to its high prevalence, morbidity and mortality and associated costs (OLIVEIRA; OLIVEIRA DE PAULA; FARNETANO ROCHA, 2015). Regarding respiratory tract infections, the Center for Disease Control – CDC has developed a new nomenclature: Events Associated with Mechanical Ventilation, however, for the purposes of notification to the National Epidemiological Surveillance System, to notify only infections in patients on mechanical

ventilation (BRASIL, 2017). One of the CI that has a high prevalence and a high preventive potential is ICUs. According to the studies by Conterno, Lobo and Masson (2011), UTI can represent 40% of CI and increases the length of stay by three days. Despite the relationship between delayed bladder catheterization and UTI, it is noticeable the fragility of implementing simple preventive measures strategies, both in Brazil and abroad (BRASIL, 2017). Michellin and Fonseca (2018) reveal that one of the first steps for planning actions and implementing effective policies for the prevention and control of CI is to know its profile in institutions. Currently, there is a host of scientific evidence, clinical guidelines, and government regulations that underlie actions for the prevention and control of CI that, while not sufficient to eradicate it, can help to recognize how and when it occurs, and thereby, generate actions in care practice (JARDIM *et al.*, 2013). According to Alves and Lacerda (2015), the practices of control and prevention of CI are deliberated by the Health Care Related Infection Control and Prevention Programs (PCIRAS), which recommend the establishment of a commission and a service of CI control.

Conclusion

There are several strategies that have been used to implement adherence to CI prevention and control measures (JARDIM *et al.*, 2013). However, these practices in the prevention and control of healthcare-associated infections are recent (NOGUEIRA JUNIOR *et al.*, 2014). In order to minimize the occurrence of this harmful event to the patient and costly to the Brazil's Unified Health System (SUS), there is a need for a care management process in hospitals that goes through continuing education processes and protocols implementation, identifying actions that help to avoid damage arising from the assistance (MIRANDA *et al.*, 2016).

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