Sanitas
Revista arbitrada de ciencias de la salud
Vol. 3(1), 24-31, 2024
https://doi.org/10.5281/zenodo.10616402

Infections related to the use of central venous catheters in critically ill neonates

Infecciones relacionadas con la utilización de catéteres venosos centrales en neonatos críticos

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ABSTRACT

Objective: to analyze infections related to the use of central venous catheters in critically ill neonates. **Method**: descriptive documentary type, the search included specialized databases, including PubMed, Scielo, Scopus and Web of Science (Wos). **Results and conclusion**: The vulnerability of neonates, combined with invasive procedures and prolonged hospital stays, creates an environment conducive to the proliferation of microorganisms, making catheters potential portals of entry. The literature review highlights the paradox between the utility and risks associated with catheters. Although they are indispensable for specialized intravenous treatments, their use carries significant threats that can prove fatal to neonates.

Descriptors: catheters; catheter obstruction; catheter-related infections. (Source, DeCS).

RESUMEN

Objetivo: analizar las infecciones relacionadas con la utilización de catéteres venosos centrales en neonatos críticos. **Método**: De tipo descriptivo documental, la búsqueda abarcó bases de datos especializadas, incluyendo PubMed, Scielo, Scopus y Web of Science (Wos). **Resultados y conclusión**: La vulnerabilidad de los neonatos, combinada con procedimientos invasivos y estancias hospitalarias prolongadas, crea un entorno propicio para la proliferación de microorganismos, convirtiendo a los catéteres en posibles portales de entrada. La revisión bibliográfica resalta la paradoja entre la utilidad y los riesgos asociados a los catéteres. Aunque son indispensables para tratamientos intravenosos especializados, su uso conlleva amenazas significativas que pueden resultar fatales para los recién nacidos.

Descriptores: catéteres; obstrucción del catéter; infecciones relacionadas con catéteres. (Fuente, DeCS).

Received: 12/09/2023. Revised: 09/18/2023. Approved: 10/21/2023. Published: 01/01/2024.

Brief original

INTRODUCTION

In the present study, the problem of infections related to the use of central venous catheters in critically ill neonates is comprehensively addressed, constituting a topic of substantial relevance in neonatal medical care. The presence of these devices, although crucial for the administration of intravenous therapies, is associated with a significant increase in the risk of infectious complications. This research aims to study in depth the nature of such infections, evaluating predisposing factors, clinical manifestations, preventive measures and therapeutic strategies, with the objective of offering a significant contribution to the improvement of clinical management and quality of care in this delicate group of patients.

The aim is to analyze infections related to the use of central venous catheters in critically ill neonates.

METHOD

An exhaustive search for scientific articles related to infections associated with the use of central venous catheters in critically ill neonates was carried out. The search included specialized databases, including PubMed, Scielo, Scopus and Web of Science (Wos). A total of 15 relevant studies were selected, following inclusion criteria based on methodological quality, thematic relevance and timeliness of the information.

The methodology employed was based on a descriptive documentary approach, where relevant data from the selected articles were collected, examined and classified. Priority was given to the identification of key variables related to the incidence, risk factors, clinical manifestations and preventive and therapeutic strategies of central venous catheter-associated infections in critically ill neonates.

The analytical-synthetic method was applied to integrate and analyze the information extracted from the selected studies, which allowed the identification of patterns, trends and discrepancies in the literature, thus contributing to a deeper understanding of the problem addressed. Data synthesis was carried out by categorizing common findings and formulating conclusions that consolidated the available scientific evidence.

The present study adhered to fundamental ethical principles, guaranteeing confidentiality and respect for the rights of the participants in the studies analyzed. The ethical regulations of the institutions involved in the original research of the selected articles were respected.

The analysis of the information was carried out through the application of statistical and qualitative techniques pertinent to the nature of the data collected. We sought to identify causal relationships, temporal trends, and modulating factors that would contribute to a comprehensive understanding of central venous catheter-associated infections in critically ill neonates.

This methodological section provides a robust basis for the exploration and in-depth analysis of central venous catheter-associated infections in critically ill neonates, ensuring the validity and reliability of the results obtained.

RESULTS

Technological progress in neonatal intensive care units has transformed the therapeutic landscape, significantly increasing survival rates in premature infants. However, this progress brings with it crucial challenges for neonatal nurses, highlighting the need to establish safe and long-lasting vascular access. In this context, the percutaneous peripherally inserted catheter emerges as a reliable tool,

facilitating effective central venous access, minimizing painful punctures and the stress associated with constant manipulation of neonates. [1 2 3]

Despite their efficacy, the use of central venous catheters has become essential in critical neonatal areas, especially in situations requiring prolonged intravenous treatments. Percutaneous insertion of silicone catheters, known as central venous catheterization, presents significant advantages but, at the same time, increases the risk of infections, constituting a substantial challenge in neonatal care. [4 5]

It is imperative to emphasize that the risk factors associated with catheter insertion and indwelling, both central and peripheral, can trigger complications that contribute to high morbidity and mortality rates in neonatal intensive care units. The vulnerability of neonates, coupled with invasive procedures and prolonged hospital stays, creates an environment conducive to the proliferation of microorganisms, with catheters serving as portals of entry. [6 7]

The literature review conducted highlights the paradox between the utility of catheters and their associated risks. Although these devices are essential for highly concentrated and long-lasting intravenous treatments, their use also carries serious threats that can prove fatal to neonates. It is crucial to recognize the importance of careful handling and proper aseptic measures by healthcare personnel, especially nurses, who play a critical role in the placement and maintenance of these devices. [8 9]

The inversely proportional relationship between the risk of infection and gestational age, birth weight, immune system immaturity and the prescription of broad-spectrum antibiotics underscores the complexity of catheter management in critically ill neonates. Recognition of these risk factors, as well as the implementation of multidisciplinary strategies to mitigate them, proves essential to optimize safety and

efficacy in the administration of intravenous therapies in this vulnerable population. [10] [11] [12]

In summary, the use of central venous catheters in critically ill neonates is an essential tool, but not without its challenges. A thorough understanding of the risk factors, the implementation of preventive measures and meticulous attention during the handling of these devices are fundamental to minimize the associated complications, preserving the integrity and health of neonates in critical settings. [13] [14] [15]

CONCLUSION

The risk factors inherent to the insertion and indwelling of catheters, both central and peripheral, are a relevant concern that can trigger complications, raising morbidity and mortality rates in neonatal intensive care units. The vulnerability of neonates, combined with invasive procedures and prolonged hospital stays, creates an environment conducive to the proliferation of microorganisms, making catheters potential portals of entry.

The literature review highlights the paradox between the utility and risks associated with catheters. Although they are indispensable for specialized intravenous treatments, their use carries significant threats that can prove fatal to neonates. It is imperative to recognize the importance of careful handling and proper aseptic measures, especially by nursing staff, who play a critical role in the placement and maintenance of these devices.

The complexity of catheter management in critically ill neonates is reflected in the inversely proportional relationship between the risk of infection and gestational age, birth weight, immune system immaturity and the prescription of broad-spectrum antibiotics. Recognition of these risk factors and the implementation of

multidisciplinary strategies are essential to optimize safety and efficacy in the administration of intravenous therapies in this vulnerable population.

The use of central venous catheters in critically ill neonates is crucial but not without challenges. A thorough understanding of risk factors, implementation of preventive measures and meticulous care during the handling of these devices are fundamental to minimize associated complications, preserving the integrity and health of neonates in critical settings.

FUNDING

Non-monetary

CONFLICT OF INTEREST

There is no conflict of interest with persons or institutions involved in the research.

ACKNOWLEDGMENTS

To the health personnel concerned with restoring the health of neonates.

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