



Neonatal intensive care unit nursing care

Cuidados de enfermería en unidad de cuidados intensivos neonatales

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ABSTRACT

The objective of this study was to analyze the nursing care associated with the epicutaneous catheter in the neonatal intensive care unit. We worked from the critical rationalism approach by means of a descriptive documentary research with bibliographic design, the population consisted of 15 scientific articles that met the inclusion criteria. It is important that the nursing staff has a high level of knowledge in the placement, preparation and conservation of the peripherally inserted central catheter, the care is established in the application of a protocol based on scientific evidence. Regarding the benefits of the epicutaneous catheter in neonatal patients, its main objective is the insertion and maintenance of the central line, it is placed through a peripheral vein until it reaches the superior vena cava, this catheter is used to maintain infusions in larger quantities, and other drugs.

Descriptors: pediatrics; nursing; health services. (Source: UNESCO Thesaurus).

RESUMEN

Se tiene por objetivo analizar los cuidados de enfermería asociados al catéter epicutáneo en la unidad de cuidados intensivos neonatales. Se trabajó desde el enfoque racionalismo crítico mediante un tipo de investigación descriptiva documental con diseño bibliográfico, la población consistió en 15 artículos científicos que cumplieron con los criterios de inclusión. Es importante que la personal de enfermería tenga un alto conocimiento, en colocación, preparación, conservación del catéter central de inserción periférica, los cuidados están establecidos en la aplicación de un protocolo basados en una evidencia científica. Sobre los beneficios del catéter epicutáneo en los pacientes neonatos, su principal objetivo es la inserción y mantenimiento de la vía central, es colocado a través de una vena periférica hasta llegar a la vena cava superior, este catéter se utiliza para mantener infusiones en cantidades mayores, y otras drogas.

Descriptores: pediatría; servicio de enfermería; servicio de salud. (Fuente: Tesouro UNESCO).

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Research articles section



INTRODUCTION

Newborns who are admitted to the neonatal intensive care unit is one of the important challenges for the health team that is providing care to the newborn, this epicutaneous catheter is an important, safe and prolonged access, and it is also less painful for the newborn, its treatment with this catheter is to receive parenteral nutrition due to the high osmolarity index, drugs such as sedatives, tranquilizers and hypnotics, infusion of continuous liquids and larger amounts, antibiotic therapy where each of these drugs contain large chemical properties that irritate the vein especially its inner layer (Perales et al. 2018).

The use of this peripherally inserted central catheter can present various complications such as bleeding, obstruction, limb edema, phlebitis, vessel perforation, catheter rupture, hydrothorax, pleural effusion, fluid extravasation, cardiac tamponade, catheter occlusion. To prevent the occurrence of other infectious processes, health units especially the critical area of neonatology raise new preventive measures, such as the use of 2% chlorhexidine and immediately remove the devices, thus avoiding sepsis as complications (Higareda-Almaraz et al. 2018).

Complications of percutaneous central venous catheters (PCVC) include catheter-related bloodstream infection (CRBSI), occlusion, leakage, and phlebitis, which can lead to sepsis or prolonged hospitalization (Li-Ting, et al. 2021). While in the neonatology unit the nursing professional plays an important role in the care and management of percutaneous lines, which receive prolonged treatments for their various pathologies; Despite the care and application of biosafety measures provided to neonates, complications related to the prolonged use of the catheter appear. Among these complications, sepsis, phlebitis, occlusion of the catheter and extravasation have been shown to occur more frequently, affecting the neonate's recovery and extending the days of hospitalization (Peñaloza-Zabala & Analuisa-Jiménez, 2021).

Based on the above, the objective is to analyze the nursing care associated with the epicutaneous catheter in the neonatal intensive care unit.

METHOD

We worked from the critical rationalism approach by means of a descriptive documentary research with bibliographic design, the population consisted of 15 scientific articles that met the inclusion criteria.

Inclusion criteria

Research articles related to nursing care of epicutaneous catheters in the neonatal intensive care unit, located in databases: Scielo, PubMed, Redalyc, between the years 2017 to 2021.

Exclusion criteria

Will be excluded from the review process, gray literature, graduate theses, non-scientific journals, non-recommended websites, topics not related to the subject of epicutaneous catheters.

ANALYSIS OF RESULTS

The care carried out by the nursing professional in the neonatal intensive care unit should be constantly strengthened through training so that the quality of care provided is increasingly much better than the previous one; giving better results in patients, as well as in the professional both for the quality and warmth in their daily work. It is important that the nursing staff has a high level of knowledge in placement, preparation and conservation of the peripherally inserted central catheter, the care is established in the application of a protocol based on scientific evidence (Gholamreza et al. 2021).

All nursing staff must have a procedural guide on the care and maintenance of the device to ensure excellence in nursing care, reducing the efforts that have the possibility of manifesting, defend the permanence, patency and duration of the catheter in a sterile manner, unite the various



points of view of neonatal nursing professionals. When placing a peripheral central insertion catheter, the neonate will have less pain at the time of its placement, better cost-benefit, and it will also have a low rate of complications compared to other types of catheters (Konstantinidi, et al. 2019),

The most commonly used approach routes for the placement of epicutaneous catheters are the upper extremities (basilic and cephalic veins), although the picaneal, temporal and axillary veins can also be used. The veins of the lower extremities are only used if the previous ones fail, because of the higher risk of contamination, due to their proximity to the genitoanal area, this procedure should be performed in a sterile manner, to avoid possible complications (Habas et al. 2018).

To avoid these complications the nursing staff must have a high scientific knowledge about its placement, if it is placed wrongly it aggravates the health status of the neonate, within the complications related to the catheter, including malposition, leakage, early migration or fracture, events related to the procedure such as bleeding, trauma to tissues underlying the placement site and pneumothorax. Late complications also include migration, fracture, infection, rupture, pericardial and pleural effusion, venous thrombosis, and catheter dysfunction (Wei et al. 2019).

The increase in bacteremias caused by *Candida* species has become the most frequent pathogen in catheter-associated bacteremias (Yamin et al. 2021). Catheter control begins at the time of catheter placement, and adequate asepsis is necessary. The most commonly used antiseptics for skin disinfection are povidone iodine, alcohol and 2% chlorhexidine. compared to gauze in invasive catheters and the use of antibiotic-coated catheters to decrease the incidence of systemic phlebitis (SRC) (Webster et al. 2019).

Care is a diversity of actions that are aimed at preserving the life of the neonate, nursing focuses its care on the body and spirit of the person, being a primary basis for strengthening health. Nurses in neonatal intensive care supply the role of the mother providing tranquility, through comfort, comfort with their multiple skills and empathy, they look for signs in neonates that produce irritability, discomfort as the next step prioritizes and provides the necessary care favoring a comfortable rest and sleep of the neonate (Tubbs-Cooley et al. 2019).

The act of caring assist, save, conserve by considering that the care of the patient with a peripherally inserted central catheter presupposes peculiar aspects for the maintenance of the device, in order to ensure its permanence and the decrease of complications. Once the circuits are connected to the patient, the continuous infusion with the indicated solution must be maintained, it cannot be stopped because there is blood return which can clog the line, verify the permeability by means of the continuous flow through the infusion pump, evaluate the skin if there is no presence of phlebitis, send blood cultures, as well as cultivate the catheter tips, every time the line is manipulated it must be done in a sterile way (Estrada-Orozco et al. 2020).

The neonate is totally dependent on the health team, details the main care as, before performing the invasive procedure maintain thermal, respiratory and hemodynamic stability, it is important to know any hematological compromise that may cause bleeding, assess the patient's condition and record in the nursing records, finished the procedure is suggested to perform a radiographic control to confirm its location of the catheter fix, and place the three-way keys, install an infusion with minimal drip to avoid coagulation (Almadhoob & Ohlsson, 2020).

The antiseptic of first choice for neonates with sufficient safety, is the use of chlorhexidine in neonatal intensive care units has increased significantly in the last decade, mainly because of its impact on catheter-related infections. Hand hygiene has shown a significantly high decrease in infection rates, daily monitoring of the insertion site, keeping a record or check link where they verify how the procedure was when placing the catheter, dates of cures, labeling of catheter placement, nursing records, catheter management, washing of lumens (Westling et al. 2020).

Regarding the use of percutaneous catheters is a mechanical and basic activity in neonatal intensive care, especially in the care of premature neonates; because catheter insertion is related



to embolism, sepsis, thrombosis or fluid accumulation, the main care is healing and dressing change every 7 days using an aseptic technique, changes of systems, extensions, circuits, connectors, 3-way key at least every 72 hours, if contamination is suspected it should be changed immediately (Ray-Barruel et al. 2019).

The nursing professional aims to provide comprehensive care to the human being in their different stages of life, especially in the most vulnerable such as the neonate, patients admitted to the NICU area require priority and individualized care to improve their adaptation and survival. All nurses providing care to neonatal patients should be trained in the asepsis of the central venous catheter insertion site for peripheral insertion, thus ensuring safety and quality of care, avoiding complications and at the same time reducing the days of stay and costs in the unit (Wang et al. 2022).

CONCLUSION

About the benefits of the epicutaneous catheter in neonatal patients, its main objective is the insertion and maintenance of the central line, it is placed through a peripheral vein until it reaches the superior vena cava, this catheter is used to maintain infusions in larger quantities, and other drugs. It should be changed daily in case the dressing is stained with hematic liquid, because the daily change has a high risk of laceration of the neonate's skin, also in case of emergency should place another catheter, see the number of lumens, anatomical location of insertion, the technique should be aseptic, the type of disinfectant most commonly used are chlorhexidine dressings.

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CONFLICT OF INTEREST

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