

NURSING CARE OF THE CHRONIC RENAL PATIENT ON HEMODIALYSIS USING DOUBLE LUMEN CATHETER

Cuidados de enfermagem ao paciente renal crônico em hemodiálise em uso de Cateter Duplo Lúmen

Cuidados de enfermería al paciente renal crónico en hemodiálisis en uso de Catéter Doble Lumen

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ABSTRACT

Objective: To evaluate the nursing care provided to chronic renal patients on hemodialysis during the handling of the double lumen catheter. **Methods:** This is a descriptive cross-sectional study conducted in a hemodialysis clinic in a medium-sized city in northeastern Brazil. Fourteen nursing professionals participated in the study. Data collection took place in September 2016, supported by a checklist of compliance with current catheter handling standards. **Results:** Most care was performed by nursing technicians, with 88.9% to 92.0% frequency. There were some failures in care, and the most common was the lack of hand hygiene, present in less than 30% of the observations. **Conclusion:** The study showed that there are gaps in nursing care for patients using catheters, and that the nurse needs constant guidance and supervision of the team to avoid them.

Descriptors: Nephrology Nursing; Catheters; Dialysis; Chronic Renal Insufficiency; Nursing Care.

RESUMO

Objetivo: Avaliar o cuidado de Enfermagem prestado ao paciente renal crônico em hemodiálise durante o manuseio do Cateter Duplo Lúmen. **Métodos:** Trata-se de um estudo descritivo, transversal realizado em uma clínica de hemodiálise de uma cidade de médio porte do nordeste brasileiro. Participaram do estudo 14 profissionais de enfermagem. A coleta dos dados ocorreu em setembro de 2016 subsidiada em *checklist* de adequação as normas vigentes de manuseio do cateter. **Resultados:** A maioria dos cuidados foi executada pelos técnicos de

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enfermagem, com 88,9% a 92,0% de frequência. Houve algumas falhas nos cuidados, e a mais presente foi a falta de higienização das mãos, presente em menos de 30% das observações. **Conclusão:** O estudo evidenciou que existem lacunas na assistência de enfermagem ao paciente em uso de cateter, e que é necessário do enfermeiro orientação e supervisão constante da equipe para evitá-las.

Descritores: Enfermagem em nefrologia; Cateteres; Dialise; Insuficiência renal crônica; Cuidados de enfermagem.

RESUMEN

Objetivo: Evaluar la atención de enfermería brindada a pacientes renales crónicos en hemodiálisis durante el manejo del catéter de doble luz. **Métodos:** Este es un estudio descriptivo transversal realizado en una clínica de hemodiálisis en una ciudad mediana en el noreste de Brasil. Catorce profesionales de enfermería participaron en el estudio. La recopilación de datos tuvo lugar en septiembre de 2016, respaldada por una lista de verificación del cumplimiento de los estándares actuales de manejo de catéteres. **Resultados:** La mayoría de los cuidados fueron realizados por técnicos de enfermería, con una frecuencia del 88,9% al 92,0%. Hubo algunas fallas en la atención, y la más común fue la falta de higiene de las manos, presente en menos del 30% de las observaciones. **Conclusión:** El estudio mostró que existen vacíos en la atención de enfermería para pacientes que usan catéteres, y que la enfermera necesita orientación y supervisión constantes del equipo para evitarlos.

Descriptores: Enfermería en nefrología; Catéteres; Diálisis; Insuficiencia renal crónica; Atención de enfermeira.

INTRODUCTION

Chronic Kidney Disease (CKD) is characterized by a progressive and irreversible reduction in renal function, and can manifest itself in changes in urinary frequency and volume, edema, arterial hypertension, weakness, fatigue, anorexia, nausea, vomiting, insomnia, cramps, itching, skin pallor, confusion, drowsiness and coma. The treatment of Chronic Kidney Disease (CKD) depends on the progress of the disease, which can be conservative with the use of medications, diets and fluid restriction, or with renal replacement therapies, such as hemodialysis, peritoneal dialysis or kidney transplantation.¹

For hemodialysis, it is necessary to have access to the central circulation of the patient, through a venous route that allows a high flow of extracorporeal blood. One means of access is the Double Lumen Catheter (CDL). This consists of a device implanted by the doctor in a patient's central vein (commonly in the jugular, subclavian or femoral veins). However, due to the complications that may arise with the use of the CDL, this is a method used on an emergency basis, commonly maintained until a long-term access is established in the patient, such as the arteriovenous fistula and / or the long-term catheter (Permcath).²⁻³

In view of this aspect, the use of CDL is subject to complications, such as obstruction, thrombosis and infections, which contribute to increased morbidity and mortality in chronic renal patients, and increased hospitalization costs. Some of these injuries are preventable, and are directly related to nursing care, which is directly involved with the care of the CDL, as it is the professional who frequently handles this device.¹⁻⁴

CDL infection is one of the most frequent complications and is associated with intrinsic factors linked to the patient himself, such as the migration of microorganisms from the patient's flora, as well as the state of immunosuppression. Exogenous factors are linked to environmental conditions, especially the transfer of microorganisms from the hands of caregivers, both at the time of catheter implantation and during subsequent care. This implies the responsibility of nursing professionals regarding the maintenance of the CDL and, consequently, the patient's health.⁵

For nursing care for chronic renal patients using CDL, it is important that care is oriented to keep the device in full operation and free of complications. Care includes dressing with aseptic techniques and at the recommended intervals, aseptic handling, heparinization, maintaining patency and proper fixation. In addition, patient education to develop a catheter preservation habit is also part of nursing care.²

Thus, it is considered that nursing care in hemodialysis is complex and specialized, and requires an appropriate physical structure and trained professionals for a safe care practice, which, if not respected, may cause harm to the patient. It appears, therefore, that the identification of gaps in patient care for hemodialysis makes it possible to reorganize care, leading to the improvement of processes and results.⁶

Based on this problem, the objective was to evaluate the care provided to the patient with Double Lumen Catheter performed by the nursing staff of a hemodialysis clinic, during the handling of the catheter.

METHODS

This is a descriptive, exploratory cross-sectional study carried out in a hemodialysis clinic in a medium-sized city in the state of Maranhão, northeastern Brazil. During the period, the service served 110 patients on a hemodialysis program, and performed an average of 50 hemodialysis sessions per day, lasting 4 hours per session.

14 Nursing professionals who met the inclusion criteria participated in the study: working for at least one year in the hemodialysis area and working in direct patient care in the hemodialysis room. As for the exclusion criteria, it was defined: professionals who worked in the dialysis reprocessing sector.

Data collection was carried out in September 2017. For the collection, a checklist-type observation instrument was used, which was prepared considering the appropriate techniques for handling and dressing the CDL, based on a previous literature review. The observed events were organized in the checklist in three parts:

1) Connecting the CDL to the hemodialysis machine: hand antisepsis, catheter lumens antisepsis, use of a mask, lumens permeability test, care to maintain the aseptic environment, breaking the aseptic technique;

2) Disconnection of the CDL to the hemodialysis machine: hand antisepsis, use of a mask, care to maintain the aseptic environment, internal cleaning of the lumens with saline and heparinization, antisepsis of the catheter lumens, sterile sealing, breaking of the aseptic technique;

3) CDL dressing: hand antisepsis, wearing a mask, maintaining the aseptic technique, materials and solutions used, breaking the aseptic technique.

Each stage of care contained in the checklist was observed directly and then classified as performed or not by the nursing professional. The instrument had an open space for describing faults not covered in closed questions. Before data collection, the instrument was validated and pre-tested, with a view to correcting failures.

Regarding the observation of the connection and disconnection steps of the patient with CDL to the hemodialysis machine, it was possible to observe 36 situations in total. Regarding the dressing, only 25 observations were obtained during the data collection period.

The resulting data were grouped, and a database was built using an Excel 2013 spreadsheet, by double entry. The results were presented in tables, and simple descriptive analyzes were performed.

The study obeys all the ethical precepts that govern research with human beings of resolution 196/96 of the National Research Ethics Commission, and received approval from the Research Ethics Committee of Universidade Paulista (protocol 57296416300005512). All participants were informed about the research objectives and methods and signed a free and informed consent form.

RESULTS

In this study, 85.7% of the participants were female, with a mean age of 44.1 years. Regarding the time of experience of these professionals in the area of hemodialysis, 43% had worked for more than 16 years.

Table 1 lists some attitudes of nursing professionals, observed during the handling of the CDL. In the 36 observations, most of the actions to maintain the aseptic environment were performed, however, there were failures with regard to lumens antisepsis before accessing them. As for attitudes with the objective of maintaining the CDL's proper functioning, such as the permeability test in the connection step; saline flush and heparin administration to the lumens at disconnection were performed on all occasions. The removal of the CDL cover, which must occur without traction to avoid displacement of the CDL, was adequate only in 27.7% of the observations (Table 1).

Table 1 - Attitudes observed by the nursing professionals participating in the study when handling the double lumen catheter in the connection and disconnection stages of the patient to the hemodialysis machine (N = 36). Timon, 2016.

Variables	YES	
	(N)	%
Connection		
Performed antisepsis / hand washing	08	22,2
Used mascara during the process	34	94,4
Put mask on the patient	26	72,2
Handled CDL under sterile field	31	86,1
Protected the lumens with sterile gauze during handling	32	88,8

Variables	YES	
	(N)	%
Performed antisepsis of the lumens with antiseptic solution before accessing them	14	38,8
Did you aspirate heparin and perform a CDL lumens permeability test?	36	100,0
After the connection, did you protect the junction CDL-lines by wrapping in gauze and sterile field?	32	88,8
Disconnection		
Performed antisepsis / hand washing	06	16,6
Used mascara during the process	33	91,6
Put mask on the patient	24	66,6
Handled CDL under sterile field	31	86,1
Protected the lumens with sterile gauze during handling	30	83,3
Flushed 20ml of SF 0.9% after disconnection	36	100,0
Filled the lumens with heparin after the SF 0.9% flush	36	100,0
Performed lumens antisepsis with antiseptic solution before sealing	10	27,7
Sealed with sterile lids	32	88,8

Regarding the care of nursing professionals during the dressing of the CDL dressing, 25 observations were made, as shown in Table 2. In these variables, attention was drawn to the low adherence to hand antisepsis, which occurred only in 28% of women occasions.

Table 2 - Care observed by the nursing professionals participating in the study during the dressing of the double lumen catheter (N = 25). Timon, 2016.

Variables	YES	
	(N)	%
Performed antisepsis / hand washing	07	28,0
Withdrawed cover without traction	24	96,0
Used mascara during the process	25	100,0
Put mask on the patient	19	76,0
Wore sterile gloves	25	100,0
Broke aseptic technique	04	16,0

Regarding the main solutions and coverings used for CDL dressings, it is noted that the most used antiseptic solution was chlorhexidine, present in 76% of the observations. The most used covering was gauze, micropore and adhesive tape, with 68% frequency.

DISCUSSION

The assessment of nursing care provided to patients with a double lumen catheter revealed that the nursing technician was the largest care provider. There were some flaws in care, and the most frequent was related to hand hygiene before the procedures, since this attitude was only verified in less than 30% of the observations. There are gaps in nursing care for patients using catheters, which can lead to iatrogenic events.

The literature reports that the nurse is usually responsible for the care related to the dressing of the double lumen catheter⁷, with the scenario reported here being unusual. It is believed that this is related to the reduced number of nurses in the team. The professional's technical training may not provide all the necessary expertise for activities that require greater complexity, such as handling the CDL.

Still regarding the manipulation of the CDL, when done inappropriately, it tends to potentiate the occurrence of obstruction, infection and thrombosis. To avoid complications, there are a number of recommended maintenance measures, such as: hand hygiene before and after handling the catheter; manipulate the CDL with sterile technique; wear a mask covering the nose and mouth by the professional and the user; use of 2% aqueous chlorhexidine to change the dressing when inserting the CDL; change the pre-hemodialysis dressing; use of sterile gauze with change every session or transparent film with change every 7 days or earlier, if necessary, for dressing dressing; cleaning of connectors with 70% alcohol; infusion of 10ml of 0.9% saline solution in each CDL route, after HD sessions and filling them after SF0.9% infusion with heparin solution.⁸⁻¹⁰

The practice of hand hygiene, one of the main recommended measures, was well below expectations for this procedure. Hand hygiene (HH) is the simplest and most effective measure, as well as the lowest cost in controlling infections related to healthcare. The literature points out a number of reasons associated with negligence associated with the HH technique, mainly related to the professionals' beliefs and myths, and adequate resources, whether human or structural.¹¹⁻¹³

Hand hygiene can be done by washing with soap and water, or by rubbing with 70% alcohol (liquid or gel), in order to reduce the transmission of microorganisms by hands. Hand washing removes dirt and microorganisms that colonize the skin superficially, and the alcohol used has a bactericidal function. Alcohol antiseptics can replace hand washing if the hands are free of dirt or organic matter.¹¹⁻¹⁴

Antisepsis of the CDL lumens, before and after its use, is another important practice for the prevention of infection that was below the recommended in this research, ranging from 27.7% to 38.8%, in the connection and disconnection stages, respectively.

The antisepsis of the CDL lumens with gauze soaked in an antiseptic solution before accessing them and before they are closed are indicated in the national guidelines. When this action is not performed, organic matter from the blood and microorganisms can adhere to the catheter's light surface and migrate into the circulation, causing bloodstream infection.¹⁵

In another aspect, in relation to the use of the mask by the professional and by the patient during the processes, there was adherence by most professionals to put on themselves, but some absences when the professional should put on the patient. The microorganisms present in the nose and mouth, eliminated by speech and breathing, are an important source of infection transmission to the insertion site of double-lumen catheters, especially when it is inserted in the jugular or subclavian vein.⁸⁻⁹

Another relevant aspect in the care of patients with CDL are actions aimed at maintaining the permeability and good functioning of the catheter, as well as maintaining it in its proper fixation. Obstruction and clot formation around or inside central catheters are important factors for the occurrence of thrombosis of the great vessels and have complications associated with bloodstream infections, embolism, in addition to loss of access due to obstruction. Heparin, for its anticoagulant properties, is used in clinical practice to perform flushes and fill the catheter pathways intermittently, with the objective of preventing the formation of thrombi and maintaining or prolonging the permeability and useful life of the catheters¹, being this practice properly followed by professionals.

For the dressing of CDL, cleaning with saline, followed by alcoholic chlorhexidine (concentration of 0.5% to 2.0%) is considered recommended practice in the prevention of infection. As for the dressing change periodicity, it must be redone every 48 hours, or earlier, if dirty or wet, when the cover is with gauze and common adhesive tape. For dressings with gauze and waterproof polyurethane film, it is recommended to change every 7 days, or earlier, if dirty or wet.¹⁵

CONCLUSION

There are some gaps in nursing care for patients using CDL, especially with regard to hand hygiene before care, which was uncommon in this research. Regarding the CDL dressing, it was characterized by the frequent use of chlorhexidine solutions as an antiseptic, and waterproof film coverage. There is a need for an intense and constant work by the nurse in order to encourage and supervise the nursing team regarding adherence to hand hygiene before care, as well as performing it with the appropriate technique.

Another point that called attention was the little presence of nurses in providing care to patients using CDL, in the observed care, understanding that this patient has characteristics that make their care more complex.

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