PULMONARY ARTERY CATHETER: NURSING CARE RELATED TO POSTOPERATIVE CARDIAC TRANSPLANTATION PATIENTS

CATETER DE ARTERIA PULMONAR: CUIDADOS DE ENFERMAGEM RELACIONADOS AOS PACIENTES NO PÓS-OPERATÓRIO DE TRANSPLANTE CARDIÁCO

CATÉTER DE ARTERIA PULMONAR: CUIDADOS DE ENFERMÉRIA RELACIONADOS A OS PACIENTES EN EL POST-OPERATÓRIO DE TRANSPLANTE CARDÍACO

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ABSTRACT

Objective: to identify nursing care in the maintenance of the pulmonary artery catheter in the postoperative period of cardiac transplantation. Method: this is a documentary study with a qualitative approach. The nursing records of patients up to 72 postoperative hours were used for heart transplantation. The analysis of the data was done by the technique of Content Analysis in the category Analysis category. Results: three categories of care were identified: “Hemodynamics,” “Healing” and “Removal of devices and catheters.” The “curative” category was the least expressive, that only records about the exchange were identified, not being possible to verify information that detailed the procedure and its periodicity. Conclusion: the maintenance, evaluation, and management of the pulmonary artery catheter are an activity not registered by the nursing professionals, which does not affirm that care is not performed, but the records found did not detail the care process. Descriptors: Monitoring; Hemodynamics; Catheters; Heart Transplant; Nursing Care.

RESUMO

Objetivo: identificar os cuidados de enfermagem na manutenção do cateter de artéria pulmonar no pós-operatório do transplante cardíaco. Método: estudo documental, de abordagem qualitativa. Foram utilizados os registros de enfermagem dos pacientes até 72 horas no pós-operatório do transplante cardíaco. A análise dos dados se deu pela técnica de Análise de Conteúdo na modalidade Análise Categorial. Resultados: foram identificadas três categorias de cuidados: << Hemodinâmica>>, << Curativo >> e << Retirada de dispositivos e cateteres >>. A categoria << Curativo >> foi a menos expressiva, na qual se identificou apenas registros sobre a troca, não sendo possível constatar informações que detalhassem o procedimento e sua periodicidade. Conclusão: a manutenção, avaliação e manejo do cateter de artéria pulmonar são atividades pouco registradas pelos profissionais enfermeiros, o que não afirma que os cuidados não são realizados, mas que os registros encontrados acabavam não detalhando o processo de cuidado. Descriptores: Monitoramento; Hemodinâmica; Cateteres; Transplante de Coração; Cuidados de Enfermagem.

Descritores: Monitor; Hemodinam; Cateteres; Transplante de Coração; Cuidados de Enfermencia.

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INTRODUCTION

Organ transplantation is considered a therapy for several chronic or incapacitating diseases, extending the life expectancy of the patient.¹ It is an effective and safe therapeutic measure. However, its accomplishment is extremely honorable for health services, and for the transplant to be performed, it is necessary for the organ to come from donation.²

The practice of organ and tissue transplantation in Brazil began in Rio de Janeiro and São Paulo in 1964 and 1965. It was marked by the first two renal transplants performed in the country. Currently, Brazil has one of the largest public organ and tissue transplantation programs in the world, ranking the countries with the highest number of transplants performed.³

Comparative data with 2014 showed that 2015 had a higher rate of potential donors reported, from 1.4% to 7.3% and from effective donors, from 0.8% to 6, 3%. According to the Brazilian Registry of Transplantations, data corresponding to the first quarter of 2015 (January to March) indicate that there are 31,204 patients on the waiting list for a transplant, and 77 are waiting for a heart transplant.⁴

All donation and organ procurement processes carried out in Brazil are regulated and regulated by Laws Nº 9.434/97, Nº 10.211/01, establishing the guidelines of the National Organ and Tissue Transplantation Policy, determining the free donation as well as the criteria for selection of the Living or Deceased Donor Potential.⁵

The potential living donor (PDV) is considered the oldest citizen, from which he is legally able to perform the donation of an organ to a relative. In situations where there is no family bond, prior judicial authorization is required.⁶ While the potential deceased donor (PDF) has the following classifications: donor with a recently stopped heart, possible to remove organs and tissues; Donor with a late-onset heart, up to 6 hours, which can only be donors of tissues; And the donor diagnosed with Encephalic Death (EM).⁷

Cardiac transplantation is considered an effective and efficient method for the treatment of heart diseases, aiming to provide a better quality of life for patients.⁸ Some authors believe that heart transplantation is the last therapeutic measure for patients with terminal myocardiopathy. Only after the completion of all interventional procedures or the use of available resources should this method be chosen.⁹ For the Brazilian Directive on Cardiac Transplantation, it is still considered a treatment of choice for patients with refractory heart failure.⁷

This therapeutic method has contraindications such as age, pulmonary hypertension, lupus, infection, neoplasia, and unfavorable emotional and psychosocial condition. Therefore, numerous evaluation protocols are adopted to select the recipients, and it is important that the patient is followed up by a multi-professional team to provide a quality treatment that will benefit the patient's life.¹⁰

Care in the transplanted patient’s PO is a challenge for the nursing team, which should be promptly attentive and prepared for any complications resulting from the transplant.¹¹ Nursing should develop a high-level care, that is, care that encompasses prevention, detection, treatment and rehabilitation of the patient. Therefore, it is essential that the nurse has a multi-professional role to attend to the needs and provide a quality care to the organ receiver.¹²

Due to the complexity and specificity of this surgical procedure, the nursing team should be prepared to systematize the care actions provided to these patients. Moreover, this care must be focused on all Pre, Intra and postoperative periods.⁶

Initially, an educational activity involving the family and the patient should be carried out to clear all doubts and clarify all phases of the transplant. A detailed physical examination is of paramount importance, and these actions correspond to the preoperative phase. In the intraoperative period, the nursing actions aim to evaluate, detect and intervene possible complications of this period. The postoperative care provided by the nursing team in the intensive care unit aims to maintain respiratory function, follow up with immunosuppressive therapy, monitor vital signs and possible complications, and hemodynamic stabilization.¹³

Pulmonary artery catheter: nursing care related...

Hemodynamic monitoring (MH) is an extremely relevant factor in the care of the critically ill patient. Among the most used monitoring methods are the pulmonary artery catheter, which allows an accurate evaluation of the hemodynamic state that is not possible by clinical means, a sense that is considered the most reliable method.¹³ This invasive technique has the purpose of measuring Intracardiac, intrapulmonary and intravascular pressure, which can be performed using the Swan Ganz® catheter or pulmonary artery catheter (CAP). This device is essential for the measurement of pressures, determination of cardiac output and administration of medicines.¹⁴

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The Swan Ganz® catheter is considered a breakthrough in the technology, developed in the 60's; it has as priority functions the registry of Right Atrium Pressure (PAD), Pulmonary Artery Pressure (PAP), Cardiac Index (IC) and Debit Cardiac (DC).15

It is imperative to use this catheter in the immediate postoperative period of cardiac transplantation, as it allows the monitoring and strict adjustment of blood volume and administration of inotropic drugs, thus guaranteeing effective cardiac performance.9

It is up to the nursing team to intensify the hemodynamic monitoring of patients after cardiac transplantation since the technique of using invasive monitoring is a primordial factor to prevent complications9 and reduce the risk of organ rejection.16

A study showed that nurses had a significant difficulty in performing care using invasive monitoring, where catheter handling techniques do not follow standardization, ending up interfering with the care provided.17 Another study reported on the use of the Swan Ganz® catheter, emphasizing how its use positively influenced in the management of therapy, but in many cases, its use is limited due to the lack of specialty of the nurses, who are not trained and prepared to deal with this instrument.15

The difficulty in locating current studies that contemplate the thematic, associated with the indispensable performance of the nurse professional in the provision of intensive care and invasive monitoring to the patients after heart transplantation, as well as in the handling of the pulmonary artery catheters (CAPs), awoke the Interested in carrying out the said research.

The results of this study aim to know the nursing care and then the implementation of actions by the nurse, who can contribute to the provision of the assistance based on scientific knowledge, providing security in carrying out the activities, as well as contribute to a better recovery of the patients assisted by the service.

**OBJECTIVE**

- To identify the nursing care in the maintenance of the pulmonary artery catheter in the postoperative period of cardiac transplantation.

**METHOD**

This is a documentary study with a qualitative approach, developed in 2015, in a tertiary level hospital in the city of Fortaleza, Ceará State. This institution specializes in the diagnosis and treatment of heart and lung diseases. The cardiac transplant of adults and children stands out among the procedures of high complexity performed.

The institution is managed by the Health Department of the State of Ceará (SESA), and it assists patients from the 184 municipalities of Ceará beyond the North and Northeast regions of the country.

The Hospital is a reference in heart transplantation and a pioneer in the Northeast in the implantation of Artificial Heart, a ventricular assist device used as a circulatory support in patients on the waiting list for transplantation. In June 2011, it became the first hospital in the North and Northeast to perform lung transplantation.18

The nursing evolution of the patients in the postoperative period of heart transplantation, as well as the standardized forms commonly used in the service, as well as the Nursing Care Systematization (SAE) records, were analyzed.

In all, in 2015, 24 heart transplants were performed. However, after applying the inclusion and exclusion criteria, we reached the final number of medical records analyzed.

The inclusion criterion was: all records of patients submitted to the procedure in 2015. The exclusion criteria were: deaths, records with illegible handwriting and did not specify the use of the pulmonary artery catheter in the transplant, medical records lost or were not available for consultation at the time of collection.

Of the total of 24 patients' files, there were two with death records; four were not located in the institution and seven had no records of evolutions on CAP care in post-transplantation. Thus, only 11 records were part of the final analysis of the study.

Before the data collection process, registration was made at the Clinical Research Unit of the institution, where a project road was delivered to be previously analyzed. We then received the confirmation of registration from the clinical research unit, which authorized the submission of the project to the Ethics Committee for consideration. Considering that the data to be collected were information restricted to the nursing care provided to the patients during the post-cardiac transplant period, the collection was obtained by extracting the records contained in the medical records. In this way, the term repository was used, due to the nature of the material used in the research.
To collect data, visits were made to the institution during the period from November/2015 to January/2016. Also, a data collection instrument was designed to help to record the information collected in the medical records, facilitating the organization of data and a better evaluation of the information collected.

All the information contained in the instruments was passed on to an Excel 2010 worksheet, which allowed the better organization, identification, and visualization of the records.

The analysis of the data was done by the technique of Content Analysis, organized in three phases: pre-analysis, material exploration, and treatment of results, inference and interpretation is conceptualized as “an operation of classification of constitutive elements of a set by differentiation under a generic title because of the common characteristics of these elements.” The categorization “is a process by which the student coordinates each observation or response collected that contains one or more of a set of categories so that The frequency of occurrence or response in each category.”

After the process of analysis of the records, the following categories were reached: Hemodynamics, Healing, and Removal of catheter devices.

The lack of detailed care is considered a shortcoming in the description of the procedures in question. The absence of the description made it difficult to understand how these actions were performed and/or evaluated.

Hemodynamic evaluation is relevant for the measurement of pressures, for the control of cardiac output, as well as for the administration of drugs. The domain of CAP utilization by health professionals still lacks knowledge. The decrease in oxygen saturation causes an imbalance between the supply and the tissue needs, which in turn can contribute negatively to the general health of the patient.

“P,” and so on were used to name more than one nursing record belonging to the same medical chart, using the subclassification “E, i.”

The project was sent to the Ethics and Research Committee of the Dr. Carlos Alberto Studart Gomes Hospital, following the norms of Resolution No. 466 of December 12, 2012, of the National Health Council, where it was approved on October 19, 2015, under CAEE # 49996215.0.0000.5039.

### RESULTS

After analyzing the data collected, the following categories were identified: Care related to hemodynamics, Care related to dressings and Removal of catheter devices.

#### Care related to hemodynamics

From the total of 11 records, there were 19 nursing evolutions that were within 72 hours after the heart transplantation. From these, it was observed that 32% (6) (Figure 1) contained information on which hemodynamic measures were performed.

The usual care was the calibration of blood gasses and the accomplishment of hemodynamic measurements.

#### Care related to dressings

The lack of detailed care is considered a shortcoming in the description of the procedures in question. The absence of the description made it difficult to understand how these actions were performed and/or evaluated.

Hemodynamic evaluation is relevant for the measurement of pressures, for the control of cardiac output, as well as for the administration of drugs. The domain of CAP utilization by health professionals still lacks knowledge. Since the decrease in oxygen saturation causes an imbalance between the supply and the tissue needs, which in turn can contribute negatively to the general health of the patient.
It is imperative to standardize nursing actions related to management, dressing changes, catheter insertion evaluation, and nursing record, as these factors are paramount in the prevention of possible complications.  

With this, it was observed that the dressing change procedure is extremely relevant about the quality of care, since, when performed correctly, it reduces the risk of infections, which in turn can be related to the Situations of organ rejection.  

- **Removal of catheter devices**

  It was found that 42% (8) of the evolutions had some record on the catheter and/or introducer withdrawal (Figure 3). Nursing care related to the maintenance or withdrawal of the catheter or the inductor, are aspects of extreme relevance about hemodynamic monitoring of the patient. Considering that the data and parameters provided by this instrument end up directing medical conducts and the nursing care provided. It is up to the professional nurse who will be exclusive with the patient within 72 hours after the transplant, to make the registry of the parameters, as well as to detail all the processes realized during the handling, the maintenance and the removal of the Swan Ganz®.  

At the institution, no rules were found on who should remove the pulmonary artery catheter. The literature shows that the insertion is of medical competence, while its maintenance and management are exclusive activities of the nurse and cannot be delegated to another professional.  

**CONCLUSION**

The analysis of the categories allowed to verify that in the records of the nursing team they presented care directed to calibration of the gasometry, accomplishment of hemodynamic measures, hygiene, and change of dressings and removal of the catheter and/or introducer. The maintenance, evaluation, and management of the CAP still have a certain deficiency regarding the registry, since the nursing evolutions do not detail what other actions and care are destined to this instrument.  

The identification of the data of this study is relevant to the favoring of the nursing care provided since the care is directly related to the length of stay of the patients in the institution. Studies in the literature have shown the difficulty of professionals (doctors and nurses) in the use of CAP, since knowledge about this instrument is still limited. In view of this, we suggest more detailed studies that should be observed and accompanied by the care provided by nurses and their team to contribute to safer and quality care, reducing the risk of complications.

**REFERÊNCIAS**


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