Archives of Current Research International

Volume 24, Issue 6, Page 170-180, 2024; Article no.ACRI.119901
ISSN: 2454-7077

Nursing Care for Patients with Atrial Flutter Undergoing Catheter Ablation: Integrative Review

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Cite as: *Sousa, Yasmin Martins de, Alessandra Trindade de Moura Felipe, Deisiane da Silva Mesquita Serfaty, Andréa Maria da Silva Luz, Karina Faine Freitas Takeda, Natasha Cristina Oliveira Andrade, Danielle Etienne de Oliveira Bezerra Lima, Camila Carvalho do Vale, Suziane do Socorro dos Santos, Marcela Raíssa Asevedo Dergan, Perla Katheleen Valente Corrêa, Maria de Lourdes Maia de Moraes de Carvalho, Jully Greyce Freitas de Paula Ramalho, Mayara Annanda Oliveira Neves Kimura, Joyce dos Santos Freitas, Bruna Rafaela da Silva Sousa, Daniele Melo Sardinha, and Tamires de Nazaré Soares. 2024. "Nursing Care for Patients With Atrial Flutter Undergoing Catheter Ablation: Integrative Review". Archives of Current Research International 24 (6):170-80. https://doi.org/10.9734/acri/2024/v24i6775.*

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: https://doi.org/10.9734/acri/2024/v24i6775

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/119901

Systematic Review Article

Received: 09/05/2024
Accepted: 11/07/2024
Published: 17/07/2024

ABSTRACT

Cardiac arrhythmias are electrical changes in the heart, causing an increase or decrease in the heartbeat, whether regular or irregular. Atrial Flutter is characterized by increasing atrial rate, and maintains regularity, but affects quality of life and can compromise Hemodynamic stability, treatment can be by Catheter Ablation, an invasive procedure performed in Hemodynamics. The objective of this study was to describe the Nursing Care provided to patients with Atrial Flutter undergoing Catheter Ablation. This is an Integrative Review of the Literature, in the databases: Scielo, BDENF, and Google Scholar in the last ten years, the sample consisted of 12 articles. Two categories were listed on the theme: Nursing Care in the pre-, Trans, and Post-procedure and Systematization and Systematization of Nursing Care. The nursing diagnoses were derived from the studies and included fear, risk of infection, risk of adverse response to iodinated contrast medium, acute pain and risk of decreased cardiac tissue perfusion. It was concluded that the description of the Nurse's performance in this procedure provides knowledge and promotes the populations health, since this research offers current data on care on the subject. It was evidenced that nursing care in this diagnosis is not so specific, but in general for cardiac catheter procedures in the Hemodynamics sector.

Keywords: Nursing care; atrial flutter; catheter ablation.

1. INTRODUCTION

Chronic Non-Communicable Diseases (NCDs) predominate in this decade, influenced by factors related to modern livelihoods, which is characterized by high stress, sedentary lifestyle, and poor diet, so they are mostly diseases caused by these factors, another part is influenced by genetic factors and favored with means of life factors. Among these NCDs, diseases that affect the cardiovascular system stand out, which represent 30% of the causes of all deaths in Brazil, causing more victims than external causes, infectious diseases, and cancer. They are diverse: Acute Myocardial Infarction, Stroke, Pulmonary Embolism, Deep Vein Thrombosis, Heart Failure, Angina, Hypertensive Diseases and Cardiac Arrhythmias [1].

Cardiac Arrhythmias (CA) are electrical changes in the heart, or in the myocardial muscle, which cause any mismatch in the frequency of

heartbeats, in which the physiological rate according to the literature should be 60 to 100 beats per minute in adults. Thus, CAs cause an alteration in these values per minute, in which they can be more (tachycardia) to less (bradycardia), or if they are specific to the heart such as ventricular or supraventricular arrhythmias. The most severe CAs are those of ventricular origin, since the right ventricle pumps to the lungs and the left to the system as a whole, the most common, are ventricular fibrillation, and ventricular tachycardia. On the other hand, supraventricular diseases represent a low risk of life, as they are of atrial origin, but they greatly affect the patient's quality of life and need to be treated [2].

The main supraventricular CAs are classified: paroxysmal, which is characterized by remaining for seconds or days and disappearing, persistent is that which does not disappear spontaneously, but if treated it can be interrupted, while permanent is at all times, and there is not always definitive treatment. The most common type is, Atrial Fibrillation, which is caused by an electrical alteration, in which activation and several atrial electrical foci occur simultaneously, reaching an irregular atrial rate of 300 to 400 beats per minute. In this way, atrial contraction is impaired, resulting in hemodynamic complications, among the main causes are mitral valve diseases, hypertension, diabetes, or lung diseases. Another supraventricular CA is the Atrial Flutter, which is also characterized by an electrical disorder, but its characteristic is due to the generally regular atrial rate reaching around 250 to 350 per minute [3,4].

The symptoms that lead to the suspicion of a supraventricular CA are diverse, but the most common are palpitation, dyspnea, chest discomfort, weakness, chest pain, and polyuria due to the release of atrial natriuretics caused by the increase in atrial pressure. The diagnosis is made by evidence on the Electrocardiogram (ECG), in which there are changes in the P Wave, being increased and irregular or regular. In addition to the ECG, there is also another more accurate test, the Holter, which is a portable monitor that analyzes and records the electrical activity of the heart for twenty-four hours, it is usually indicated when the ECG does not detect it at that time, so the Holter has the accuracy to identify any change in the beat, due to the period it is installed [5,6].

Among these supraventricular CAs, Atrial Flutter stands out, which it is characterized by an electrical disorder in the atria, increasing the atrial rate, but maintaining regularity. For treatment, drug therapy is included, to normalize the atrial rate, anticoagulants are also used, as this process can cause the formation of thrombus or emboli in the atria and by transporting to a vessel of smaller caliber and causes ischemia. Another option is Cardioversion, which is the application of an electrical charge to the chest, at a power of 50 jaules, is indicated when the patient presents hemodynamic instability. And finally, another type of treatment called ablation is highlighted, via cardiac catheterization, performed by the professional Hemodynamic Physician and Hemodynamic Nurse [7].

Catheterization is an invasive surgical procedure, performed in a Hemodynamics room, which aims to diagnose and treat both cardiac, vascular and neurological conditions. In cardiology procedures, the process is based on the insertion of radiopaque catheters in venous vessels, the most used are radial and femoral, contrasts are used for visualization via X-ray, which provide functional and anatomical data of the coronary arteries and cardiac chambers, thus guiding the best therapeutic conduct and diagnosis [8].

Thus, cardial catheterization enables several types of treatment for certain conditions, among the various is Ablation, which is performed via cardiac catheter, which aims to eliminate or block an arrhythmogenic circuit, through the application of radiofrequency energy at the target site of the heart, which is a high frequency electrical energy, which when applied to the tissue releases heat and dehydrates the cells, local necrosis and elimination of the site responsible for the arrhythmia [2].

Thus, catheter ablation is indicated for the treatment of Atrial Flutter, and qualified professionals are needed to assist it. The professional Nurse in Hemodynamics stands out, in which his performance becomes very important, since this professional works in the management and care in the Hemodynamics sector. The Hemodynamic Nurse develops several functions that require proactivity and agility, must be prepared for any complication in which it is necessary to make quick and accurate decisions. Continuous knowledge is required, as it deals with critically ill patients, in which one must also know how to manipulate the technological materials that make up the hemodynamics room, characterizing a complex place. He assists the patient in the pre, trans and post-procedure [9,10].

Nursing care is a science supported by Nursing Theories, which allows them to work based on evidence, the theories address biological, psychosocial, transcultural systems, etc., the most famous theory is that of Wanda Horta, Basic Human Needs, encompassing from vital needs to leisure. From this perspective, a scientific method for nursing care was developed, called Systematization of Nursing Care (NCS), which is a process that allows the identification of problems based on theories. Within the NCS there is the Nursing process, which establishes the five steps to be followed: 1) Anamnesis and Physical Examination (identification of problems), 2) Elaboration of Nursing Diagnoses according to the North American Nursing Diagnosis Association (NANDA) taxonomy. 3) Set a goal, the Expected Results. 4) Nursing Prescriptions and 5) Assessment [11].

From this perspective, the objective of this research is to describe the NCS Nursing Care in patients with Atrial Flutter in the catheter ablation procedure, through an integrative review of the literature.

2. METHODOLOGY

This is an Integrative Literature Review (RIL), descriptive and with a qualitative approach. RIL provides new evidence on a given topic, thus contributing to new evidence, and being very relevant in the area of Nursing. All its stages were followed: 1) Establishment of a hypothesis or research question; 2) Sampling or literature search; 3) Categorization of studies; 4) Evaluation of the studies included in the review; 5) Interpretation of results; 6) Synthesis of knowledge or presentation of the review. It allows the analysis of data from already published works, synthesizing the most relevant ones and providing the literature with important evidence for the given theme [12].

The following research question was defined: What is the Nursing Care in patients with Atrial Flutter in the Catheter Ablation procedure? For the search and sampling, the criteria for inclusion and exclusion were defined: Inclusion, Original articles, case report, review, dissertation, and thesis of those published in the last ten years, in any language. For exclusion, experience reports, manuals, and articles that do not answer the research question. Studies dating back to 2010 were included.

Nursing Database (BDENF), Scientific Electronic Library Online (SciELO), and Google Scholar were searched with the following descriptors: Nursing Care; Atrial flutter; and Catheter Ablation. Also included in the search is the crossing of the Descriptors using the indicator AND: Nursing Care AND Atrial Flutter; Nursing Care AND Catheter Ablation.

In the next phase, the materials that fit the criteria were selected and then the in-depth reading took place, to list the categories to be discussed and analyze the results in order to develop the synthesis of the research.

3. RESULTS AND DISCUSSION

The search concluded with a sample of 12 articles that fit the inclusion criteria, where in the Google Scholar database 29 articles were found, of which 23 were excluded, and 5 were included, while in the BDENF 18 were found, and 15 were excluded, and 3 that answered the research question were included. A total of 34 were found in the SCIELO, but only 3 were included, and 31 were excluded.

After defining the sample for the study, 11 articles, the materials were read in depth, with the objective of listing the categories to be discussed about Nursing Care for patients with Atrial Flutter in the Catheter Ablation procedure. Thus, two categories were elaborated: Nursing Care in the Pre, Trans and Post-procedure and Systematization and Systematization of Nursing Care.

Table 1. List of found, excluded and included articles

N° of studies	Found	Deleted	Included
Database			
Google Scholar	29	23	06
BDENF	18	15	03
SCIELO	34	31	03

Source: Authors' research.

Table 2. Sample articles included

Authors	Title	Methodology
Meyer [13].	Health Care Utilization in a Nurse-Led Atrial Fibrillation Clinic	An AF clinic was designed to serve as an independent clinic to standardize patient care and improve access to care. Patient demographics at baseline, care pathways, and interventions were characterized in the clinic. The primary outcomes were hospitalizations and emergency room visits (ER), before and after the clinic was implemented.
Nicoletti [14].	The work of the Nurse in a Hemodynamics Unit	Ril, Latin American and Caribbean Health Sciences Literature (LILACS) databases. A total of 8 articles were selected for analysis.
M [15]	Content validation of the nursing interventions "Teaching: Preoperative" and "Teaching: Procedure/Treatment" of the Classification of Nursing Interventions, for percutaneous procedures in Hemodynamics	Descriptive field research, with expertise in Hemodynamics, answered the intervention of Nursing in Hemodynamics.
Fernandes [16].	Competencies of nurses in interventional radiology	Integrative Review, in the databases of Brazil and Portugal.
Coast [17].	Nurses' performance in the hemodynamics service: an integrative review	RIL: Scientific Electronic Library Online, BDNE, and Virtual Health Bank with 11 articles. Categories: Nurses' actions in the Hemodynamics service; Nursing care with the patient in the Hemodynamics service.
Régis [18].	Nursing care in cardiac catheterization and coronary angioplasty: development of an instrument	In a descriptive, applicative, quantitative-qualitative study, in a Hemodynamics Unit, a form on the subject was applied to Hemodynamic Nurses
Read [9].	The role of the nurse within the hemodynamics unit	RIL, descriptive and qualitative, Scielo, Lilacs, and Medline.
Aaron [19].	Importance of nursing care in cardiac catheterization	This was a retrospective, descriptive study with a quantitative approach in a philanthropic hospital in the city of Ponta Grossa/PR, in 2013, through medical records.
Araújo [20].	Nursing care within the hemodynamics	RIL, virtual databases:

Authors	Title	Methodology
	unit related to femoral introducer removal: a responsibility of the hemodynamics nurse	Virtual Health Library (VHL) and Pubmed (US National Library of Medicine National Institutes of Health).
Sartori [21].	Nursing diagnoses in the hemodynamics sector: an adaptive perspective	Quantitative research in a Hemodynamics Unit with 100 patients using the Roy Adaptation model
Oliveira [22].	Nursing in a hemodynamics laboratory: diagnosis and intervention based on Roy's Adaptation Theory	This is a descriptive and cross-sectional study, with a quantitative approach, carried out in a public hospital in Fortaleza-CE, Brazil, from July to September 2009, in a sample of 233 patients.
Aquino [23].	Nursing diagnoses in patients undergoing cardiac catheterization in a cardiology unit	This is an exploratory, descriptive study conducted with seven nurses from a cardiology unit of a university hospital in Curitiba/PR.

Source: Authors' research.

3.1 Nursing Care in the Pre, Trans, and Post-Catheter Ablation Procedure

The work of the professional Nurse begins even before having contact with the patient because in the Hemodynamics Sector, the Nurse is also responsible for management and material resources. Therefore, it is responsible for the preparation and assembly of all the necessary instruments for hemodynamics procedures, which are elective or urgent, and it is also responsible for the management and organization of the activities carried out in the sector, as well as the Nurse must know all the risks that the procedure can cause and is prepared to act in any complication such as cardiorespiratory arrest, hemorrhages, ischemia, etc. [14,24].

The performance of the Nurse is not only limited to patient care but also to the management of material resources and management of elective activities, as well as the preparation of all equipment to be used in the procedures, thus concluding that their performance in the Hemodynamics sector is characterized as care and management.

The next step in care is the pre-procedure nursing consultation and patient preparation. The consultation aims to collect all possible data such as family history, personal history, pre-existing diseases, whether they have already undergone any surgical procedure, medication in use, allergies, eight-hour fasting, and signing of the consent form. The purpose of data collection is to identify possible problems before the procedure, after recording vital signs and weight, obtaining a large venous access in the limb that will not be performed. And finally, prepare the patient, being emotionally and physically, guide him about all the steps of the procedure, clarify all his doubts and fears, because the guidelines allow the patient to be calm and encouraged, even reflecting in a better recovery in the post-procedure [15].

One of the most common complications is allergies related to contrast, so a thorough investigation of allergy history is necessary, and it is appropriate to conduct in case of allergic presentation, ranging from an eczema to anaphylaxis. Diabetic patients should be advised not to take two oral antidiabetic drugs first, in order not to overload the kidneys, since contrast has this potential. Attention should also be paid to renal function, as the use of contrast is already a risk factor for acute renal failure [16].

In the trans-procedure, the nurse should perform the trichotomy and, if necessary, position the patient appropriately and protect the skin. Apply the electrodes, and administer oxygen by

cannula. At the time of sedation, the level of consciousness should be assessed and the patient should be instructed on all stages. After this step, the hemodynamics assists in the puncture for catheter insertion, as well as ~~is~~ attending to the monitor to verify the patient's hemodynamic stability [17].

After the end of the procedure, the nurse is responsible for removing the catheter and then applying direct pressure to the insertion site for hemostasis, 5 minutes for the radial and 20 minutes for the femoral one, then an occlusive and compressive dressing should be performed on the site, to avoid extravasation, as there are several complications related to the insertion site. Refer the patient to the anesthetic recovery room for a period of 2 to 6 hours, monitor vital signs, and chest pain, evaluate puncture dressing, maintain venous access, advise on not moving the limb, observe limb coloration, pay attention to signs of hypoxia and thrombosis [18].

Thus, the importance of trained nurses in the Hemodynamics sector is highlighted, as their attributions are essential for patient safety and post-procedure success. It is emphasized that patient orientation is essential for acceptance and tranquility for the procedure, with repercussions on the patient's rehabilitation.

Guidance at the time of discharge is also very important, it is up to the nurse to guide the patient on the main care: do not make a physical effort for at least 24 hours, avoid bending over, immediately seek the health team if you have active bleeding, chest pain, tingling or pallor of the limb, shortness of breath. Regarding the medications that the patient will need to take, it is advised drug interactions, time, effects, and adverse reactions. Encourage and encourage them to return for outpatient follow-up [9].

In this category, the role of the nurse in the patient submitted to catheter ablation or any catheter procedure for cardiac purposes was evidenced. She highlighted her attributions: Management of human and material resources, Pre-procedure Nursing Consultation, preparation for the procedure, performance in the procedure itself, post-care, and guidance during discharge.

3.2 Systematization of NCS Nursing Care

The objective of this category is the applicability of NCS in patients with Atrial Flutter in the Catheter Ablation procedure. It is an invasive procedure that causes fear, insecurity and also risks.

The Hemodynamics patient is characterized by being highly complex and requires differentiated care and greater attention. Thus, the problems identified are diverse, but only the priority and most relevant ones in clinical practice will be discussed. The first very evident problem was fear, because it is related to the unknown, tension, insecurity and complications, so the nurse needs to intervene to this problem [19].

The invasive procedure directly in an artery provides the risk of infection, since the insertion of the catheter becomes a gateway for pathogens, thus justifying the care of preventive measures in relation to infection of the insertion site, aseptic measures before and after the procedure, as well as the performance of the dressing and constant evaluation of the site [20].

The use of iodine contrast can cause an allergic reaction, it is necessary to evaluate the risk factors, history of allergies, and the patient's vulnerability, so one must be prepared for the correct conduct in the face of a condition of anaphylaxis that is the most serious, prepare all the material for this type of urgency. However, the allergic response can present itself in other ways, and within a period of seven days after the procedure, the patient is advised to seek the health service if they present any alteration such as eczema, pruritus, erythema or any other dermatological, respiratory or cardiovascular alteration [21].

Pain is a sensory and emotional experience, characterized by being unpleasant, mediated by some actual or potential tissue injury, so it is a very individual condition, each one interprets it in a different way, but it affects the quality of life and in the situation in question even compromises hemodynamic stability, since pain has the potential to alter vital signs. The nurse has the obligation to intervene in pain, as it will improve the patient's hemodynamic condition and provide comfort and well-being, crucial factors emphasized in Wanda Horta's theory [22,25,26].

Catheter ablation is a procedure that can cause some damage to the myocardium, by the application of radiofrequency energy at the target site, it can cause some damage to the vessels, offering the risk of decreased perfusion, so the nurse must be ready to intervene before it

happens or identify it early. The constant monitoring of vital signs, oximetry, and signs of shock, among others, helps in the early identification and reflecting on ideal conduct, minimizing risks and valuing patient safety [23].

One study showed that symptoms of depression and anxiety and the female gender emerged as clear indicators of poor quality of life in patients with atrial fibrillation and atrial flutter. These risk factors should be used to identify patients who may require further evaluation and treatment efforts to manage their cardiac conditions or quality of life. Interventions to improve the quality of life in these individuals require further investigation [27].

Nurse education of patients after catheter ablation for atrial fibrillation is associated with improved quality of life and reduced frequency and severity of symptoms compared with usual care [28]. One study validated a same-day discharge program after catheter ablation in atrial fibrillation led by advanced practice nurses. A standardized protocol, including supervised ambulation, patient education, femoral inspection, and ultrasound. It proved to be safe and effective, led by a committed nurse. However, ultrasound-guided femoral puncture practically eliminated complications at the puncture site, and should be a prerequisite for same-day discharge [29].

Another study on advanced nursing care after catheter ablation in atrial fibrillation showed that it improves short-term clinical outcomes, patient satisfaction, and physical activity, and decreases alcohol intake [30].

The quality of nursing care in cardiac arrhythmias should be improved when the curriculum of the undergraduate nursing matrix emphasizes the theme, which is still fragile [31]. Another study, published in a high-impact journal in the field of cardiology, highlighted the benefits of nurse-led care in a hemodynamics unit [32].

In this category, priority nursing diagnoses were evidenced, since the patient in hemodynamics has many other diagnoses, but they are limited in discussion because they need to be extended on the subject. Thus, the Nurse works based on the NCS, with the objective of providing quality in nursing services, as well as science-based care.

Table 3. Assistance plan

Problems	Nursing Diagnoses	Defining Characteristics/Related Factors	Nursing interventions
Fear	Fear	Characterized by the patient's behavior, related to the procedure	Provide guidance on the procedure, on risks and benefits, explain all steps, clarify all doubts
Catheter Insertion	Risk of Infection	Related to catheter insertion	Perform hand hygiene, perform antisepsis before and after insertion, perform dressing and evaluate phlogistic signs, apply the phlebitis scale every 2 hours
Contrast	Risk of Adverse Response to Iodine Contrast Medium	Related to the intravenous use of contrast for a?	Information on allergy history, prepare materials and drugs for an anaphylaxis emergency, pay attention to monitoring, advise on any allergy presentation up to 7 days after the procedure, and seek the team
Pain	Acute Pain	Characterized by the patient's report related to the invasive procedure	Administer prescribed painkillers and doses, if necessary, apply the 2/2h

Problems	Nursing Diagnoses	Defining Characteristics/Related Factors	Nursing interventions
			analogue pain scale, identify factors that increase and minimize pain, anxiety control, environment control
Catheter ablation	Risk of cardiac tissue perfusion decreased	Related to catheter ablation procedure	Control of arrhythmias and shocks, cardiac care in the acute phase, fluid balance, control of vital signs, attention to signs of dyspnea and respiratory hypoxia, Hemodynamic monitoring

Source: Authors' research.

4. CONCLUSION

The research allowed us to address the theme today, making it possible to describe the performance of the Nurse in the Hemodynamics sector in the Catheter Ablation procedure in patients with Atrial Flutter, but it was shown that the actions of the Nurse are not very specific for this diagnosis, but in general in the patient who is going to undergo a cardiac procedure in hemodynamics.

The nursing diagnoses were derived from the studies and included fear, risk of infection, risk of adverse response to iodinated contrast medium, acute pain and risk of decreased cardiac tissue perfusion.

The use of NCS for nursing care is highlighted, as it provides systematized and organized care, based on and sustained by Nursing Theories, making it a scientific care. In this way, NCS offers the patient quality care, minimizing risks and highlighting patient safety. Nurses in the Hemodynamics sector need specific knowledge, continuing education and a lot of responsibility, as it is a sector that performs invasive procedures, and several complications related to the procedure may occur, since patients are already considered critical and the risk is even greater. Thus, it provides the literature with current evidence on the subject, offering professionals the opportunity to deepen the theme, this research also promotes the health of patients, since the description of the services of Nurses in this sector will provide knowledge and quality care, not only for the authors, but also for the readers.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/119901