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CHECKLIST FOR MONITORING OF HEART CATHETERIZATION: A STRATEGY FOR NURSING MANAGEMENT

CHECKLIST PARA ACOMPANHAMENTO DE CATETERISMO CARDÍACO: ESTRATÉGIA PARA O GERENCIAMENTO DE ENFERMAGEM

CHECKLIST PARA MONITOREO DE CATETERISMO CARDÍACO: UNA ESTRATEGIA PARA LA GESTIÓN DE ENFERMERÍA

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ABSTRACT

Objective: applying a checklist to monitor diagnostic and therapeutic cardiac catheterization procedure as a strategy for the management of nursing care. **Method:** for six months there were monitored procedures through a CheckList form, in a hemodynamics service of a teaching hospital. There were included scheduled procedures of patients admitted to the hospital and outpatient, and excluded urgency/emergency procedures. The study had the research project approved by the Research Ethics Committee, CAAE 0283.0.208.000-11. **Results:** the form applied was useful in monitoring complications after cardiac catheterization and provided necessary support for nursing care management to patient seen in this context. **Conclusion:** the application of an administrative tool allowed detailing the procedures, becoming an effective measure for control and knowledge of adverse events and risks involved. The results of this study may provide grants for changes in hemodynamic laboratories, where the priority should be given, especially to groups at risk. **Descriptors:** Checklist; Cardiac Catheterization; Administration of Patient Care.

RESUMO

Objetivo: aplicar um *checklist* para acompanhar procedimento de cateterismo cardíaco diagnóstico e terapêutico como estratégia para o gerenciamento do cuidado de enfermagem. **Método:** durante seis meses foram monitorados os procedimentos por meio de um formulário tipo CheckList, em um serviço de hemodinâmica de um hospital de ensino. Foram incluídos procedimentos agendados de pacientes internados no hospital e ambulatoriais, e excluídos procedimentos de urgência/emergência. O estudo teve aprovado o projeto de pesquisa pelo Comitê de Ética em Pesquisa, CAAE 0283.0.208.000-11. **Resultados:** o formulário utilizado foi útil na monitorização de complicações pós-cateterismo cardíaco e forneceu subsídios necessários para o gerenciamento do cuidado de enfermagem ao paciente atendido nesse contexto. **Conclusão:** a aplicação de uma ferramenta administrativa permitiu detalhar os procedimentos, tornando-se medida eficaz para controle e conhecimento dos eventos adversos e riscos envolvidos. Os resultados deste estudo podem fornecer subsídios para modificações pontuais nos laboratórios de hemodinâmica, onde a prioridade deve ser dada, sobretudo aos grupos de risco. **Descritores:** Checklist; Cateterismo Cardíaco; Administração dos Cuidados ao Paciente.

RESUMEN

Objetivo: aplicar un *checklist* para monitoreo el procedimiento de cateterismo cardíaco diagnóstico y terapéutico como estrategia para la gestión de los cuidados de enfermería. **Método:** durante seis meses fueron monitoreados procedimientos a través de un formulario CheckList, en un servicio de hemodinámica de un hospital universitario. Se incluyeron los procedimientos programados de los pacientes ingresados en el hospital y ambulatoriales, y excluidos los procedimientos de urgencia/ emergencia. El estudio tuvo el proyecto de investigación aprobado por el Comité de Ética en la Investigación, CAAE 0283.0.208.000-11. **Resultados:** el formulario utilizado era útil en el monitoreo de complicaciones después de la cateterización cardíaca y proporcionó apoyo necesario para la gestión de los cuidados de enfermería al paciente asistido en este contexto. **Conclusión:** la aplicación de una herramienta administrativa permitió detallar los procedimientos, por lo que se volvió como medida eficaz para el control y el conocimiento de los eventos adversos y los riesgos involucrados. Los resultados de este estudio pueden proporcionar subvenciones para cambios específicos en laboratorios de hemodinámica, donde se debe dar la prioridad, sobre todo, a los grupos de riesgo. **Descriptor:** Checklist; Cateterismo Cardíaco; Administración de la Atención al Paciente.

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INTRODUCTION

Cardiac catheterization is a procedure in which catheters are inserted into arteries or peripheral veins under local anesthesia, taking them to the heart, with the objective diagnosis (angiography) and therapeutic (percutaneous transluminal coronary angioplasty - PTCA) for Coronary Artery Disease (DAC). Increasingly conducted, the incidence of complications related to catheterization decreased over the years; however, it is not risk-free and due to its high cost and risks involved, should be indicated with caution.¹

The literature shows a number of complications related to this procedure, which can be classified as allergic, vase-vagal and vascular. In the latter they are among others, bruising, bleeding and pseudoaneurysm. In addition, there are complications not inserted in a particular subgroup, for example, acute myocardial infarction (AMI) and kidney failure induced by contrast.² Complications may be related to several factors, among them, the use of anticoagulants, hypertension (HAS) and use of introducers caliber.³

Identifying errors, successes and risks are part of the management of an establishment. Like any health service, in hemodynamics services, where they operate several professionals, including nurses and physicians in interventional cardiology, there is a complex activity, and several factors may compromise the results. Therefore, it is important that basic principles are followed by all in pursuit of quality, efficiency and social responsibility.⁴ In this incurs the hemodynamic service that must be a local health feasible, in which training and improvement of staff are fundamental and constant, and that conduct and unsatisfactory performances⁴ are monitored and faced with managerial actions aimed at patient's safety.

The Brazilian Society of Cardiology (SBC) brings in one of its recommendations for guidelines that hemodynamic services offer a standard of safety, with aspects such as minimum number of procedures to be performed and emphasizing more attention to the time before, during and post procedure.⁴

The SBC also establishes essential standards for the safe and efficient performance of diagnostic and therapeutic procedures in interventional cardiology. For both are listed items to be observed, such as facilities, materials and aspects related to patients.⁵

The occurrence of many complications or adverse events during and after the

catheterization procedure in the study of the service in question caused unrest throughout the team, which led us to the need to identify the causes behind these events that were happening. The events were not monitored, making it difficult later comparison, but there was a consensus among professionals that were many.

Given that the quality of the nursing work process is essential to organizational context, the deficits related to its assistance undertake the care provided to the patient.⁶ Still, given what is recommended to hemodynamics services for safety to patients, measures intervention should be instituted when there is the perception that such security has not being achieved. Thus, management tools can contribute to the quality of care provided;⁶⁻⁷ among them, the checklist⁷ can be a strategy favorable to nursing management, given its increasing use in health care, specifically as patient safety.⁸⁻⁹

OBJECTIVE

- Applying a checklist to follow procedures for diagnostic and therapeutic cardiac catheterization as a strategy for the management of nursing care.

METHOD

This is a descriptive, cross-sectional study with a quantitative approach, performed in a hemodynamics service of a teaching hospital. Data were collected during six months, from February to July 2012, during which there were performed 255 procedures, of which 214 were studied, which corresponds to a sample with 2,69% error and 95% confidence. For this calculation we used the R 2.9.0 software and the application "TamAmostra.r".

The study included patients undergoing cardiac catheterization procedures diagnosis and treatment of inpatients and outpatients. There were excluded patients treated in urgency/ emergency character.

Cardiac catheterization procedures were monitored using a standard form CheckList. This instrument was developed by the subject related literature, subdivided into items necessary for the management of nursing care, covering the characterization of patients; risk factors related to the patient, procedure room and after procedure; and also the presence or absence of complications. The instrument has been tested previously, to be defined the need for inserting or removing items, to reach a final version.

To check the occurrence of adverse events there were conducted procedures:

hospitalized patients were monitored and outpatients contacted by phone and asked to return to service in case of any problem.

The analysis was performed by using descriptive statistics, using the 95% confidence interval, in order to identify the proportions of the variables. Continuous variables were described by the median, quartiles, average, standard deviation and variance, and categorical variables expressed in absolute frequencies and percentiles.

Comparison was made between the groups with or without complication, to verify the association between variables it used the Chi-square test and was adopted a level of 5% significance level (p-value <0,05). Data were compiled in a spreadsheet using Microsoft Excel®.

The study followed all ethical principles and was approved by the Ethics Committee in Research with Human Subjects (Registration ZIP: 2650.257 / 2011-11 - Registration CAAE: 0283.0.208.000-11).

RESULTS

The CheckList favored the identification of complications, because it involved the assistance of patients undergoing cardiac catheterization in the moments before, during

and after the procedure. Similarly, the development of this administrative tool from related literature resulted in important strategy for monitoring adverse events, crucial task to be considered in nursing management. Arising from this will be detailed some peculiarities related to the complications observed.

In the study sample (n = 214) there were documented 49 complications, accounting for 22.9%. Ages were grouped, oscillating between 28 (minimum) to 90 (maximum) years old, first quartile (Q1) 55, median 61, third quartile (Q3) 69 years old; average of 61,6 years old ± 1,45 with 95% confidence interval; standard deviation of 10,85 years and variance 117,72.

Table 1 shows variables used in the study and the percentage of complications that have occurred.

Table 1. Variables used in the study and percentages of the complications that have occurred. Curitiba - PR, 2012.

Variables	n (%)	Complications (%)	IC 95%	P-value
Gender				
Male	114 (53,2)	19 (16,6)	9,8 - 23,5	0,021
Female	100 (46,7)	30 (30,0)	21,0 - 38,9	
Age (in years)				
28 - 55	55 (26,0)	14 (25,4)	13,9 - 36,9	0,406
56 - 61	53 (24,7)	10 (18,8)	8,3 - 29,4	
62 - 69	63 (29,4)	18 (28,5)	17,4 - 39,7	
70 - 90	43 (20,0)	7 (16,2)	6,8 - 30,7	
Procedure				
Outpatient	92 (42,9)	16 (17,3)	9,3 - 24,6	0,096
Hospitalized	122 (57,0)	33 (27,0)	19,1 - 34,9	
Risk factors				
Smoker	39 (18,2)	11 (28,2)	14,0 - 42,3	0,515
Dyslipidemia	131 (61,2)	34 (25,9)	18,4 - 33,4	
Hypertension	176 (82,2)	43 (24,4)	18,0 - 30,7	
Diabetes mellitus	88 (41,1)	21 (23,8)	14,9 - 32,7	
Dyslipidemia	131 (61,2)	34 (25,9)	18,4 - 33,4	
Former-Smoker	84 (39,2)	18 (21,4)	12,6 - 30,2	
Other	58 (27,1)	8 (13,8)	6,1 - 25,4	
Procedure performed				
CAT	176 (82,2)	37 (21,0)	15,0 - 27,0	0,160
ATC	38 (17,7)	12 (31,5)	16,7 - 46,3	
Duration of the exam				
Up to 20 minutes	99 (46,2)	19 (19,1)	11,4 - 26,9	0,571
21 - 25 minutes	21 (9,8)	5 (23,8)	8,2 - 47,2	
26 - 30 minutes	43 (20,0)	10 (23,2)	10,6 - 35,8	
> 31 minutes	51 (23,8)	15 (29,4)	16,9 - 41,9	
Checking for vital signs				
Yes	99 (46,2)	20 (20,2)	12,2 - 28,1	0,384
No	115 (53,7)	29 (25,2)	17,2 - 33,1	
Compression				
≥ 20 minutes	130 (60,7)	32 (24,6)	17,2 - 32,0	0,457
< 20 minutes	84 (39,2)	17 (20,2)	11,6 - 28,8	

Table 1 indicates higher proportion of male subjects (n = 114); however, among females (n = 100), the percentage of complications was significantly higher (p = 0,021). Noteworthy is also more complications in hospitalized origin of patients (27,0%) and the age group 62-69 years old (28,5%).

The factors that stood out for being more frequent in the proportion which had complications are: smoking (28,2%), dyslipidemia (DSLPI) (25,9%), hypertension (24,4%), and diabetes mellitus (DM) (23,8%).

There were carried out 176 diagnostic catheterization procedures (82,2%) vs. 38 PTCA procedures (17,7%). Complications were more frequent in the group that underwent catheterization (n = 37) compared to PTCA (n = 12); however, proportionally, there were obtained a higher percentage of complications in PTCA (31,5%).

The duration of the test variable was separated into groups, ranging from 05' (minimum) to 1 hour 40' (maximum) Q1 20', median 25', Q3 30'; average of 29'24" ± 02'20", with 95% confidence; SD 17'27" and variance 13". In the group that exceeded 31 '(n = 51) was observed significant number of complications (29,4%).

Regarding nursing care, checking vital signs was performed in 46,2% of patients. In most patients this practice has not been performed (53,7%) and was greater number of complications. Regarding the time of compression after removal of the introducer, in 60,7% of the subjects there was conducted compression ≥ 20 minutes.

DISCUSSION

Complications accounted for 22,9% of all tests performed. In the literature found similar results in a study in which there were included cardiac catheterization diagnostic and therapeutic in the sample (22,3%).¹⁰

The identification of these complications has the potential to support the development of strategies for nurses in care management. Therefore, it is imperative to recognizing characteristics related to patients undergoing cardiac catheterization,¹¹ considering the numerous individual needs.

There was prevalence in the male study (53,2%). This aspect has also been found in patients with acute coronary syndrome,¹² corroborating to the fact that these individuals are most affected by ischemic conditions. However, with regard to post cardiac catheterization complications, the female appears more likely,¹³⁻⁴ which is in line with this study, it was found to correlating

this variable with adverse events (p = 0,021). In this regard, it is noteworthy that the female associated with age and risk factors such as diabetes, dyslipidemia significantly impacts the aspects related to heart problems. However, this claim has not yet been well established in the scientific community.¹⁵

In this study, several other comorbidities were identified as important risk factors for the development of complications, which are also relevant and not statistically relevant, being cited in other studies, DSLPI,¹⁶ DM, hypertension,¹⁷ smoking and as well as the exam duration.¹⁸

The process, to guarantee the quality of care provided to patients in any and all medical service, permeates aspects ranging from the observation of reality to the creation of remedial measures. In this sense, studies of nurses attitudes of scale, with regard to issues that influence the quality of care, and the adverse event as a result indicator,¹⁹ prevention of adverse events,²⁰ and strategies for time management and aimed interventions of quality⁷ are extremely valid.

Independent of management strategies, patient safety is related to several issues, from common interventions include checking vital signs, as pointed out in this study, and procedures such as hand washing, use of personal protective equipment, preparation and administration medication and environmental control activities for safety and patient comfort.⁷ However, ensuring the effectuation of all measures is necessary for the quality of the care provided; this is a managerial competence of the nurse.

CONCLUSION

It was possible to apply a checklist to monitor diagnostic and therapeutic cardiac catheterization procedure; and considering that it was an effective strategy for the management of nursing care.

Effective management can support the prevention of complications. The fact that monitoring procedures can be a painful task, but if it is rooted routinely, automatically there is an adaptation of all involved, making it less expensive. That "make sure everything is right" or "check what went wrong" allows engagement and greater attention from the staff. Knowing the patient's clinical history and detail best all dynamics involved in the procedure is essential to a management that seeks quality in service.

Some limitations should be considered in this study and that made it impossible to include some patients in the sample, such as

difficulty in achieving the researcher collect all data daily for failure in the transmission of information or difficulty to monitor different stages of the proceedings occurring simultaneously and yet, the inclusion of outpatients did not allow a full evaluation of all.

The study provided all involvement with the context in which is inserted hemodynamic service. The application of an administrative tool allowed detailing and following procedures, making it an effective measure to control and knowledge of adverse events and risks involved. It was possible, above all, joint management and care knowledge, which are sometimes erroneously separated.

Adverse events are still common in our reality and the risk factors found in this study may provide grants for specific changes in hemodynamic laboratories, among these, should be prioritized prevention, particularly for groups at risk, describing the service provided.

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