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Case Study of Nursing Care with Pressure Bandage Technique on Nursing Problems of Post PCI Bleeding Risk in the Heart Room of General Ahmad Yani Hospital Metro City

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ABSTRACT

Background & Objective: Acute coronary syndrome (SCA) is a set of symptoms that occur due to the accumulation of atherosclerotic plaque in the walls of blood vessels, which is part of Coronary Heart Disease (CHD). The purpose of this study was to determine the description of nursing care with pressure dressing techniques in patients with nursing problems of Post PCI bleeding risk. **Method:** This type of research is descriptive research using the case study method. The action taken is the application of the pressure dressing technique using a mechanical pressing device on the puncture area where the catheter is inserted after the PCI procedure. The monitoring process was carried out for 2 x 24 hours after the application of the technique to assess the effectiveness of the intervention and monitor signs of bleeding. **Result:** After 2 x 24 hours of treatment, there were no signs of bleeding, the acral was warm and pain at the puncture area was reduced. **Conclusion:** Answering the research objectives. Should The risk of bleeding can be well managed through treatment with the pressure dressing technique.

Introduction

Acute coronary syndrome (SCA) is a set of symptoms that occur due to the accumulation of atherosclerotic plaque in the walls of blood vessels, which is part of Coronary Heart Disease (CHD). SCA is classified as a medical emergency in cardiology, as it carries a high risk of morbidity and mortality due to the complications that can occur. If not treated promptly and appropriately, this condition has the potential to cause sudden death in the sufferer (Aziz et al., 2019).

For decades, Cardiovascular Disease has been the leading cause of death in the world. In 2019 it was estimated that 17.9 million people died from Cardiovascular

Disease which accounted for 32% of all global deaths. Then in 2021 as many as 20.5 million people died from Cardiovascular Disease, this figure accounts for about 33% of all global deaths (World Health Organization, 2021).

Based on the Indonesian Health Survey (IHS) in 2023, the prevalence of heart disease diagnosed by doctors reached 877,531 people. West Java Province has the highest prevalence with 156,977 people, while South Papua Province has the lowest prevalence with 1,684 people. In Lampung Province, the prevalence of heart disease was recorded at 29,331 people (MOH RI, 2023).

One of the main interventions to treat SCA is Percutaneous Coronary Intervention (PCI). PCI is a non-surgical intervention that aims to reopen the coronary arteries. The procedure is performed by inserting a balloon or stent through a catheter inserted into the lumen of the blood vessel. The aim is to increase blood flow to the coronary arteries, improve myocardial ischemia, and address the clinical manifestations of SCA (Muhith et al., 2023).

Although PCI can improve blood flow in the coronary arteries, the procedure is not free from the risk of complications. Vascular complications of the PCI procedure include hematoma, microvascular aneurysm, bleeding, edema, pain at the insertion area, ecchymosis, embolism, arterial occlusion, arterial spasm, arteriovenous fistula, and retroperitoneal hematoma. These complications increase the risk of mortality, morbidity, medical costs, and length of hospitalization of patients (Baidhowy et al., 2021).

Complications that patients often experience after PCI procedures are pain and hematoma. Bleeding or hematoma is a major vascular complication that is often reported and can cause serious complications after PCI. Hematoma occurs due to puncture access to the femoral artery that is not closed properly, causing blood accumulation in the surrounding tissue (Baidhowy et al., 2021).

Research conducted by Garg et al. (2019) showed that out of 520 patients who had undergone PCI procedures, 53 (10.2%) of them experienced hematoma. Meanwhile, research conducted by Anas et al., (2022) showed that of the 33 patients who underwent PCI procedures, 16 people (48.5%) experienced complications. While 17 of them (51.5%) did not experience complications. Complications that occur include hematoma, bleeding, allergies and contrast-induced nephropathy.

Hematoma can cause pain and swelling. To prevent hematoma, it is necessary to carry out post PCI treatment, namely maintaining hemostasis in the puncture area and assessing vascular complications (Nuraeni et al., 2023). To reduce the risk of hematoma, management of post PCI patients is carried out with the aim of achieving vascular hemostasis at the catheterization access site through manual or mechanical pressure (Sari et al., 2017).

The post PCI mechanical pressure dressing procedure is performed by attaching a device to the radial artery puncture site using air inserted into the device to apply sufficient pressure to stop bleeding. The device is maintained for four to five hours. In the third hour, the deflation process is carried out gradually while monitoring for possible bleeding. This is done to ensure hemostasis, minimize the risk of complications, and maintain patency of the patient's radial artery (Córdova et al., 2018).

Objective

The purpose of this case study is to provide an overview of nursing care with pressure dressing techniques in patients with nursing problems of Post PCI bleeding risk.

Method

This type of research is descriptive research using the case method. The client in this case study is Mr. Mr. Z, 61 years old, male with a medical diagnosis of anteroseptal STEMI. The client underwent a PCI procedure and experienced a bleeding risk nursing problem. The process is carried out using the steps of the nursing process, namely assessment, diagnosis, intervention, implementation, and evaluation. Data collection methods are used by interviewing clients to obtain the necessary information, then making direct observations of the results of applying pressure dressing techniques and client responses during the monitoring period and documenting the data that has been collected in the form of a nursing care process.

Results and Discussion

Assessment

The results of the assessment on Mr. Z. Z male age 61 years obtained subjective data the client said pain in the wrist in the area of the former puncture action. And objective data found that the client had undergone PCI 30 minutes before the assessment was carried out, attached to the radial artery suppression device on the right wrist. The results of the examination of the client's vital signs are known TD: 184/112 mmHg, N: 97 x/min, P: 28 x/min, S: 36.7o C and SPO2: 98 %. The client received DAPT treatment therapy, namely Ticagrelor 2 x 90 mg and Aspilet 1 x 80 mg.

According to Baidhowy et al. (2021), hematoma is a common complication after Percutaneous Coronary Intervention (PCI), characterized by swelling and pain in the catheter area due to the accumulation of blood under the skin. Hematoma can occur due to bleeding at the insertion site or dilation of blood vessels, which increases blood flow. If left untreated, hematoma can cause pain and discomfort to the patient.

According to Garg et al., 2019 the use of Dual Antiplatelet Therapy (DAPT) has a risk of hematoma formation, especially when used in PCI where the stabbing of the radial artery is performed. DAPT, which is commonly used to prevent thrombosis after coronary intervention, can reduce the body's ability to clot blood. This increases the likelihood of bleeding in the puncture area, which can develop into a hematoma.

Based on the author's analysis of existing data and theory, there is congruence showing that the risk of hematoma after PCI procedure is one of the most frequent complications. In addition, the use of dual antiplatelet therapy (DAPT) is known to decrease the body's ability to clot blood, potentially increasing the risk of bleeding in the puncture site. This risk is an important concern in the evaluation of patients undergoing PCI procedures.

Nursing Diagnosis

From the results of the assessment of nursing diagnoses obtained, namely the risk of bleeding proven by the effects of pharmacological agents (D.0012).

Intervention

In this case the intervention given to Mr. Z male aged 61 years with bleeding risk problems proven by the effects of pharmacological agents is a pressure bandage

(I.02028) based on the Indonesian Nursing Intervention Standards (SIKI). Bandage pressure is an action taken by dressing the wound with pressure to prevent or stop bleeding (PPNI, 2018). While the outcome based on the case in the Indonesian Nursing Outcome Standards (SLKI) is the level of bleeding (L.02017). The expected result of this intervention is that the level of bleeding decreases with the outcome criteria of increased skin moisture, decreased postoperative bleeding, improved blood pressure, improved blood pressure, and improved body temperature.

Implementation

On the first day, a pressure dressing technique using a mechanical device was applied to prevent active bleeding in the post-PCI puncture area. Monitoring was done on the patient's vital signs, including blood pressure, pulse, and body temperature, to detect early bleeding complications. In addition, the patient was educated on the importance of maintaining immobilization of the affected arm to support the hemostasis process.

Routine monitoring was done every 30 minutes to ensure there was no hematoma or active bleeding. The patient was given a comfortable position in bed to minimize movement of the right arm. The nurse also gave direct instructions to the patient and family to avoid activities that could put additional pressure on the puncture area. The process of deflation of the pressure dressing was done gradually to assess the ability of the patient's body to maintain hemostasis without external pressure.

According to Córdova et al. (2018) after a PCI procedure, the arterial access site (usually the radial or femoral artery) is prone to bleeding. Mechanical pressure dressings are used to apply pressure to the arterial puncture site to prevent bleeding. By using a pressure dressing, the risk of hematoma and other serious complications can be minimized. And according to Wu et al. (2022) mechanical pressure dressings are used to control bleeding at the puncture site after PCI procedures. By applying appropriate pressure on the radial artery, the device helps stop blood flow and prevent excessive bleeding. Effective use of pressure dressings can reduce the risk of serious complications such as hematoma or bleeding requiring additional intervention.

The use of pressure dressings and proper monitoring after the PCI procedure is crucial in patient care. By using pressure dressings, the risk of hematoma and other serious complications can be minimized and regular monitoring of bleeding allows nurses to detect signs of bleeding early, such as swelling or discoloration in the puncture area. If bleeding occurs, action can be taken immediately to address the problem.

On the second day, the focus of implementation remains on monitoring for signs of bleeding or hematoma. Performing light movements on the uninjured hand helps prevent complications such as edema due to immobilization. In addition, further education was also provided to the patient regarding the signs of bleeding that need to be considered. According to Nemeth et al. (2023) educating patients about the signs of bleeding can help in early detection. Knowledge of symptoms such as pain, swelling, or discoloration in the access area can prevent serious complications such as hematoma or radial artery occlusion. According to Wu et al. (2022) by involving patients in the monitoring process and providing information on signs to watch out for, patients can be more active in maintaining their health post PCI procedure. This

education also helps patients understand the importance of following instructions from healthcare professionals and reporting unusual symptoms.

Evaluation

On the first day, the evaluation of the nursing diagnosis of bleeding risk showed that the patient was in a stable condition. Subjective data obtained from interviews with patients showed that they did not feel significant pain and felt comfortable. Objective observations showed that there were no signs of bleeding at the puncture area, and the radial artery pressure device used during the procedure had been removed without complications. The patient's vital signs, including blood pressure 143/88 mmHg, pulse frequency 89 x/min, and body temperature 36.3°C, were within normal limits.

Analysis of the collected data showed that the risk of bleeding was well controlled through the application of the pressure dressing technique. The nursing interventions performed on the first day were successful in reducing the risk of bleeding, and the care plan was continued with closer monitoring.

On the second day, the evaluation of the nursing diagnosis of bleeding risk showed a positive development. Subjective data from the patient showed that they felt better and had no significant complaints. Objective observations again showed no signs of bleeding at the stabbing area, and the patient remained in a stable condition. Vital signs remained consistent with the first day's results, indicating that there was no significant change.

Data analysis showed that the pressure dressing technique applied for 48 hours was effective in preventing the risk of bleeding. Although there were slight complaints of discomfort in the dressing area, there was no indication of bleeding occurring. Thus, the evaluation on the second day confirmed that the nursing intervention was successful in managing the risk of bleeding, and the patient could be considered for discharge without complications.

Conclusion

The results of nursing care show that the pressure dressing technique is effective in managing the risk of bleeding and accelerating hemostasis in post-PCI patients. A comprehensive approach, including physical measures, intensive monitoring, and education to patients and families also plays an important role in improving patient understanding of the care process.

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