

APPLICATION BASED ON NURSING CARE: CASE STUDY

Marwiyah^{1*}, Ismail Fahmi^{1,2}, Reta Renylda^{1,2}, Mashudi^{1,2}, Halimah^{1,2}

¹Departement of Nursing, Politeknik Kesehatan Kementerian Kesehatan Jambi, Indonesia

²PUI-PK, Politeknik Kesehatan Kementerian Kesehatan Jambi, Indonesia

*Corresponding author: marwiyahidris@gmail.com

ABSTRACT

Background: Bleeding is a common complication in post-Percutaneous Coronary Intervention (PCI) patients from the femoral route due to the use of strong anticoagulant and antiplatelet therapy. To prevent post-PCI bleeding in the ICCU, mechanical pressure was applied using a 1.5 kg sand pillow for 6 hours. This study aims to describe the application of mechanical pressure using a 2.3 kg sand pillow for 2 hours in post-PCI patients.

Method: This study is a summary of case presentations and interventions in two post-PCI patients through a nursing care approach.

Results: After 1 day of implementing the intervention in both patients, there were no incidents of bleeding and hematoma incidents in patients who used 2.3 kg sand pillow pressure for 2 hours. However, there was a difference in the level of comfort, the legs did not feel numb and sore, while patients using 1.5 kg sand pillow pressure for 6 hours, the legs felt numb, sore and painful in the groin.

Conclusion: It was concluded that the application of 2.3 kg sand pillow pressure for 2 hours in post PCI patients can prevent complications and increase patient comfort.

Keywords: CHD, PCI, therapy

INTRODUCTION

The American Heart Association identifies that there are 17.3 million deaths each year caused by heart disease and this death rate is expected to continue to increase until 2030 (Lara, 2022). In the United States, cardiovascular disease is the leading cause of death, namely 836,456 deaths and 43.8% of which are caused by coronary heart disease (Lara, 2022).

Percutaneous Coronary intervention (PCI) is a non-surgical intervention or procedure to open or widen narrowed coronary arteries so that blood flow can return to the heart muscle and is usually performed through the radial, brachial and femoral arteries (Reviansyah et al., 2022).

Bleeding is one of the complications associated with percutaneous coronary intervention from the femoral route due to the use of strong anticoagulation and antiplatelet

therapy including adenosine diphosphate receptor inhibitors and glycoprotein IIB/IIIA inhibitors. Complications include hematoma, retroperitoneal bleeding, pseudoaneurysm, arteriovenous fistula, arterial occlusion, femoral neuropathy and infection. The vascular incidence during diagnostic coronary angiography is 0.44-1.8% and can affect up to 4% of percutaneous coronary intervention (PCI) procedures.

To prevent bleeding and hematoma in PCI access, sand pillow pressure is performed after the sheath is removed. The standard operating procedure (SOP) for post-cardiac catheterization patients at Dr. Kariadi General Hospital, Semarang is that after the femoral sheath is removed, manual pressure is applied for approximately 15 minutes followed by mechanical pressure with a 1.5 kg-2.5 kg sand pillow for 6 hours and the patient is asked to immobilize by not bending the right leg. Although various studies on the use of sand pillows have shown an ineffective results for

post-cardiac catheterization wound pressure, Dr. Kariadi General Hospital, Semarang still uses it because there is no substitute. The weaknesses of sand pillows from the observation results include, the amount of pressure caused by the sand pillow is not measurable, not constant and the position of the sand pillow cannot be stable (Rifqi & Pillow, 2013).

It was found in the ICCU room of Raden Mattaher Hospital, the pressure of the sand pillow used was a sand pillow weighing 1.5 kg with a time of 6 hours so that patients complained of discomfort such as numb legs and sore thighs. Yilmaz et al. (2007) in their study, that using a 4.5 kg sand pillow for 30 minutes and 2.3 kg for 2 hours and concluded that there was no significant difference in the incidence of bleeding and hematoma between the two groups, but there was a significant difference in the level of comfort experienced by patients between the two groups.

Exploring how "Implementation of 2.3 kg Sand Pillow Pressure for 2 Hours in Post PCI Patients in the ICCU Room Based on Nursing Care in 2024.

METHOD

This study is a case study with a nursing care approach. The cases are two post-PCI patients in the ICCU of a hospital in January 2024. The inclusion criteria are CHD patients after cardiac catheterization, male gender, aged <70 years, femoral PCI access, normal blood clotting factors (DDimer, PT/APTT, CT/BT), and no psychosis. While the exclusion criteria are patients with abnormal blood clotting factors D-Dimer, PT/APTT, CT/BT, patients with complications with CHF niha 4, patients with psychosis. When post-PCI patients are treated in the ICCU, researchers select patients who meet the inclusion and exclusion criteria of the study. In addition, Title of the article. researchers inform patients about the study. When the patient agrees, researchers explain

the procedure and begin the research intervention.

RESULTS AND DISCUSSION

Case history before intervention The two patients, aged 51 and 69 years, underwent bleeding prevention intervention and cardiac care intervention. Each patient involved in this study gave written voluntary consent and agreed to publication. The purpose of nursing intervention with nursing problems in this case is referred to the Indonesian nursing output standards. It is expected that there will be no bleeding with the outcome criteria, namely normal hemoglobin, normal hematocrit.

Interventions carried out to prevent bleeding Interventions were carried out by identifying patients based on the research inclusion and exclusion criteria. After obtaining the patient's consent, continue by explaining to the patient about the action plan to be carried out, asking about the patient's complaints, observing the patient's hemodynamics (BP, RR, Pulse, Oxygen Saturation, ECG image), opening the gauze covering the puncture area and carefully removing the sheath, applying pressure to the area 1-2 cm above the puncture for 15 minutes, If there is no active bleeding in the puncture area, cover the wound with gauze and hypafik, bandage the femoral area using an elastic bandage, place a 2.3 kg sand pillow on the bandaged puncture area for 2 hours and the patient is immobilized while the sand pillow is attached, observe bleeding on the bandage for the first 15 minutes, observe bleeding on the bandage for the second 15 minutes, observe bleeding on the bandage for the third 15 minutes, observe bleeding on the bandage for the fourth 15 minutes, observe bleeding on the bandage for the first 30 minutes, observe bleeding on the bandage for the 30 minutes Second, remove the sand cushion from the puncture area.

Patient condition after intervention An overview of the patient's condition. Evaluation An evaluation was conducted on patient 1, no internal or external bleeding was found, no hematoma in the cardiac catheterization access, hemoglobin level 13.5 g/dl. An evaluation was conducted on patient 2, no internal or external bleeding was found, no hematoma in the cardiac catheterization access, hemoglobin level 11.6 g/dl.

The respondents in this study were male, the age of respondents who underwent cardiac catheterization was 51 years and 69 years for the intervention group, this age is lower compared to the study conducted by Janno Sinaga, et al. which concluded that the majority of CAD/MI patients were male and the average age of patients who underwent coronary angiography and PCI/PTCA was in the age range of 55-70 years.

Kern, (2023) said that myocardial infarction more often attacks older adults because older adults have greater risk factors such as a history of smoking, high total and LDL cholesterol levels, hypertension, DM, and age factors themselves. Another study by Wagner (2027), as many as 58% of respondents were male, while Wijpkema, et al. (2025), 57.4% of respondents were male. Thus it can be concluded that men are more often subjected to coronary angiography and PCI/PTCA. Based on the pathophysiology and risk factors for CAD, Prince and Wilson (2026); Woods, et al. (2025), which states that men have risk factors for suffering from CAD related to patterns / lifestyles such as smoking and diet habits, as well as irregular activity / rest.

The use of catheter diameter in this study was 6 Fr. This is in accordance with Kern's research (2023) the use of large or small catheter diameter sizes in cardiac catheterization procedures depends on the type or purpose of the procedure performed, the diameter of the blood vessels. If coronary angiography procedures generally use catheters of 6 Fr or smaller.

This study found that there were no bleeding incidents and no hematoma incidents, this shows that there were no incidents of blood vessel complications between clients who used a 2.3 kg sand pillow for 2 hours and a 1.5 kg sand pillow for 6 hours. But the results of the study showed that there was a significant difference in the level of comfort. Patients who used a 1.5 kg sand pillow for 6 hours experienced discomfort such as numb legs, soreness, and pain in the groin, unlike the pressure of a 2.3 kg sand pillow for 2 hours, patients felt more comfortable such as their legs did not feel numb and sore because the time required for mobilization was shorter, only 2 hours. This study is in line with research conducted by Sinaga, et al. with the results of using a 2.3 kg sand pillow for 2 hours did not increase the incidence of blood vessel complications, but increased patient comfort, and allowed clients to mobilize earlier.

CONCLUSION

Can prevent complications such as bleeding and hematoma and increase patient comfort. It is expected that hospital institutions can improve the quality of nursing care services, especially in coronary heart disease patients undergoing cardiac catheterization in terms of nursing care.

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CONFLICT OF INTEREST

The researcher declares that he has no affiliation or involvement in an organization or entity with any financial interest (such as honoraria, educational grants, participation in speakers, membership, employment, consultancies, or other equity interests and expert testimony or patent-licensing arrangements), or non-financial interests such as personal or professional relationships, affiliations, knowledge of beliefs in the subject matter or materials discussed in this manuscript.

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