



Case Report on Nursing Management of a Client with Peripheral Arterial Disease

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Authors' contributions

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

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Case Study

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ABSTRACT

Peripheral artery disease is a frequent cardiovascular ailment in which constricted arteries restrict blood flow to our limbs. When we have Peripheral Artery Disease in our limbs, our legs haven't had enough flow of blood to increase production. The capillaries that nourish the lower legs narrow and stiffen in peripheral vascular disease, making walking harder. Reduced blood flow can cause cartilage and necrosis in the limbs. Peripheral arterial disease (PAD) is usually caused by multilevel atherosclerotic disease, typically in patients with a history of cigarette smoking, diabetes mellitus, or both. Intermittent claudication (IC), an early manifestation of PAD, commonly leads to reduced quality of life for patients who are limited in their ambulation. Percutaneous intervention for peripheral artery disease has evolved from balloon angioplasty for single lesions. To achieve good long-term efficacy, a close follow-up including objective tests of both the arterial lesion and hemodynamic status, surveillance of secondary preventive measures, and risk factor control.

A 65-year-old man was admitted to the hospital with the following symptoms: worsening left severe calf pain, fatigue, cramping, aching, pain in the legs or arms that worsens when walking or using the arms, tightness in the muscles of the legs that worsens with exercise and improves with rest. He has a diabetes mellitus history. The lower extremity pulse was diminished or absent on physical

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examination, but all other vital signs were typical. Pulses in the left dorsalispedis and posterior tibialis could not be felt. The results of the cardiac examination were average. The patient has numbness in one leg, pain in both legs, decreased energy in both upper and lower limbs, ulceration, gangrene in the lower extremities, Hair loss, weakness, and dependent rubor (redness caused by swelling) present. He had audible bruits, a nonhealing lower extremity wound, and a delayed capillary refill, so he started treatment as soon as possible. The primary focus of this study is on professional management and outstanding nursing care, which may provide the holistic care that peripheral arterial disease necessitates while also effectively managing the challenging case.

Keywords: Peripheral Arterial disease; claudication; gradual blackening (gangrene); atherosclerosis.

1. INTRODUCTION

PED is an abnormally reduced arterial disease other than the arteries supplying the heart or brain [1,2]. In the case of narrowing, it is referred to as a coronary artery condition, and cerebrovascular disease is also referred to in the brain [3]. Peripheral artery disorder most frequently affects the lower extremity; however, some other capillaries, including the arms, neck, or kidneys, might be involved too [3,4]. The classical symptoms, known as intermittent claudication, are also known as intermittent claudication leg pain during walking [5]. leg ulcers, pale epidermal, chilly skin or irregular nails, and skin developing in the affected leg are further signs [3]. Infection or mortality from tissues, including amputation, coronary artery disease, or stroke, maybe a complication [3]. No symptoms occur in up to 50 percent of PAD sufferers [6].

The most common cause of PAD is having a cigarette. 3 Diabetes, hypertension, kidney disease, and hyperlipidemia are all risk factors. The most common underlying cause of peripheral arterial disease is atherosclerosis, which affects adults over 40 the most [7,8]. Arteriosclerosis, internal bleeding, injury, and psoriasis are some of the other causes [1,9]. PAD is often diagnosed by a systematic blood pressure divided into an arm's blood systemic knee pressure (ABI) of less than 0.90 diagnoses [10]. Ultrasound and angiography duplex can also be employed [11]. Angiography is more precise and at the same time allows the treatment; yet, it is more vulnerable [10].

Because it has not been thoroughly explored, it is unclear if monitoring for peripheral artery disease is beneficial in persons who have no symptoms. [8,12,13] Patients with intermittent claudication due to PAD benefit from smoking cessation and coordinated exercise therapy [14,15]. Aid can

also be provided by medication such as statins, ACE inhibitors, and cilostazol [11,16]. Increased risk of heart attacks do not seem to help people who suffer from the minor disease, but it is often suggested for people with more substantial conditions [8,17,18]. No benefit is usual for anticoagulants such as warfarin [19]. The treatment of the condition includes grafting, angioplasty, and atherectomy procedures [20].

Some 155 million people globally have PAD in 2015 [21]. Age is becoming more prevalent [22]. It affects around 5.3% of people between 45 and 50, whereas 18.6% of 85 to 90 years old are in the advanced world. 4.6% of persons between the ages of 45 and 50 and 15% of people between 85 and 90 in the developing countries are affected. PAD is equally common in the industrialized world among men and women; however, women are most often affected in the underdeveloped world [23]. In 2015 PAD led to around 52,500 fatalities, up from 16,000 in 1990 [2,24].

2. CASE PRESENTATION

A 65-year-old man was admitted to the Acharya Vinoba Bhave Rural Hospital with complaints of worsening left calf severe pain, fatigue, cramping, aching, and pain in the legs or arms that worsened when he walked or used his arms. He has a family history of diabetes. The patient's condition was agitated. He couldn't keep up with his hygiene. The patient's family is from a working-class family. Both communicable and non-communicable diseases were absent in his family. He and his family had good interpersonal relationships with relatives, neighbors, and other family members. When he is admitted, he has a fever of 102⁰ degrees Fahrenheit. Blood test, Random blood sugar test, obstructive arteriosclerosis palpation method, magnetic resonance angiography (MRA), Doppler ultrasound, Ankle-Brachial index (ABI) were

done. Administration of Anticoagulant, antiplatelet agents- low dose aspirin therapy, antipyretic, antibiotics, insulin as per physician orders.

2.1 Physical Examination

On physical examination, the patient had a diminished or absent lower extremity pulse, but his vital signs were typical. Pulses in the left dorsalispedis and posterior tibialis could not be felt. The results of the cardiac examination were average. The patient had pain in both legs, had decreased energy in both upper and lower limbs, had gangrene in the lower extremity, and had a weakness, so treatment was started as soon as possible.

2.2 Diagnostic Assessment

Blood test: Haemoglobin% -9.1%, total Red Blood Cell count-4.36 million/cu.mm, total White Blood Cell count-5100/cu.mm, total platelet count-4.59lacs/cu.mm, In patients with diabetes and peripheral arterial disease, mean hemoglobin A(1c) levels were 9.1+/-2.1 percent in those with ABIs of 0.60 to 0.89 and 7.1+/-0.9 percent in those with ABIs of 0.60 to 0.89 (p0.0001), the higher the hemoglobin A(1c) levels in patients with diabetes with PAD, the higher the prevalence of severe PAD. Albumin-4.2 g/dl, Globulin-5.9 g/dl in liver function test, urea-42mg%, creatinine-7.8mg%, sodium-137meq/L, potassium-3.8meq/L,T3,T4 and TSH were all normal reading in renal function test.

2.3 Medical Management

The patient is oriented with person and place upon admission; however, he does not respond after treatment, and his condition is unstable. Cilostazol 100 mg tablet, Low-dose aspirin (75-325 mg per day) The first-line treatment is OD. Symptomatic treatment, antiplatelet agent, Pentoxifylline-400 mg twice daily after meals, regular saline IV OD, Ceftriaxone 750 mg IV BD, Plavix (Clopidogrel)-300 mg dose followed by 75 mg for 14 days up to 12 months, regular saline IV OD Syp. Low dose Rivaroxaban (Xarelto)2.5mg orally administered as per physician orders, paracetamol 5ml orally SOS, insulin every 4 hours, and low dose Rivaroxaban (Xarelto)2.5mg administered as per physician orders.

2.4 Nursing Management

Peripheral Arterial Disease is a treatment that consists of a combination of lifestyle modification,

drugs, or, if necessary, special procedures or operations. Nurses will determine which treatment is best for the patient's condition. The patient's vital signs are meticulously documented. The patient's condition is deteriorating. He doesn't react or responds to treatment in any way. The nurse must work diligently to help the patient with peripheral arterial disease. Stopping smoking, blood pressure reduction, cholesterol reduction, blood sugar management, and a balanced eating plan are all lifestyle changes that can aid in the treatment of PAD. Getting regular exercise, such as 30 minutes of fast walking, every day helps you lose weight. If you have too much heavy leg discomfort, Provide may recommend medications to decrease your blood pressure, avoid blood clots, and relieve leg pain. If one of the patient's legs' blood supply is entirely restricted, the nurses may use angioplasty or bypass graft surgery to clear the blockage. Increasing circulation, Pain relief, and tissue damage or infection prevention Change your sleeping position and take care of your feet. Assist with symptomatic treatment. Feet are protected and cushioned. The ankle-brachial pressure index measures the ankle and the wrist (ABPI). The femoral, popliteal, and foot pulses are all examined. According to the patient family members, excellent nursing care was provided. Interact to promote the patient's condition and reduce the risk of complications.

Nursing diagnosis and Interventions:

1. **Nursing diagnosis:** Acute pain related to arterial insufficiency

2.5 Expected Interventions

- Assessed for the characteristics of pain and was found to have continuous burning pain with a pain score ranging between 4 to 6
- Advised him to keep the limbs in a dependant position
- Encouraged him to take adequate rest
- Provided him with diversional therapy such as reading books. Administered Inj. Morphine 5 mg every six hours and Inj. Febrile 1 gm every six hourly for pain management
- outcome: He verbalizes reduction of pain.

2.5.1 Evaluation

He verbalized reduction of pain. His pain score ranged between 3 to 4 after the interventions.

2. Nursing diagnosis: Anxiety related to impending surgery and the post-operative course of recovery.

2.5.2 Expected Outcome

Anxiety is minimized as evidenced by verbalization of reduction in anxiety and calm and relaxed posture.

2.6 Interventions

Assessed the level of anxiety provided him spiritual and psychological support by counseling and by explaining to him about the disease condition and the post-operative management:

- Oriented him to other patients who have recovered from the same disease condition
- Provided him diversional therapy by encouraging him to read books
- Encouraged him to ask questions and cleared all the doubts in his language
- Explained about the surgery, anesthesia, and recovery room
- Encouraged his wife and son to support him spiritually and psychologically
- Health teaching was given on deep breathing exercises to help him to relax
- Tab. Valium 5 mg was administered before he was called into the theater to calm him and to

2.6.1 Evaluation

He verbalized reduction in anxiety level and was less agitate reduce stress:

2. Nursing diagnosis: Ineffective peripheral tissue perfusion related to arterial insufficiency.
Expected outcome: He maintains optimal tissue perfusion as evidenced by warm extremities, palpable pulses, reduction of pain, and absence of new ulcers

2.7 Interventions

- Assessed the extremities for any change in color, temperature, and texture
- Assessed the ulcer site on the left big toe for signs of infection and worsening cyanosis/necrosis
- Maintained the affected extremity in a dependant position

- Provided him meticulous foot care by applying liquid paraffin
- Dressing was done with spirit soaked gauze piece as it prevents web space infection
- His toenails were trimmed short
- Provided ArtAassist therapy to improve the peripheral circulation

2.7.1 Evaluation

He maintained optimal tissue perfusion as evidenced by warm extremities, palpable pulses, reduction of pain, and prevention of ulcers.

3. DISCUSSION

A 65-year-old man was admitted to the Acharya Vinoba Bhave Rural Hospital with complaints of worsening left calf severe pain, fatigue, cramping, aching, and pain in the legs or arms that worsened when he walked or used his arms. He has a family history of diabetes. After all of the tests and examinations, he was diagnosed with Peripheral arterial disease. Since receiving treatment, he has not improved, and the patient's condition is not stable. The patient's condition was agitated. He couldn't keep up with his hygiene. The patient comes from middle-class family background. Both communicable and non-communicable diseases were absent in his family. He and his family had good interpersonal relationships with relatives, neighbors, and other family members. When he is admitted, he has a fever of 102⁰ degrees Fahrenheit. Blood tests, RBS tests, the obstructive arteriosclerosis palpation method, magnetic resonance angiography (MRA), Doppler ultrasound, and the Ankle-Brachial Index (ABI) were all performed. Anticoagulants, antiplatelet agents, low-dose aspirin therapy, antipyretics, antibiotics, and insulin were administered as directed by the physician. Excellent nursing care was provided and continues to be provided until the end of my stay.

Its more frequent prevalence of acute antioxidant arterial disease in the lower extremities is atherosclerosis. During activity or even relaxation, the blood supply to your lower extremities is reduced, resulting from the atherosclerotic procedure. A range of symptoms is present, whose severity varies on the extent of their participation and the collateral circulation accessible. As a result, problems can occur from ischemia to severe distress. Recurrent septic arthritis describes soreness in the affected limb

that worsens with exertion and subsides with rest. This soreness is typically caused by a blockage or occlusion of an artery. Because the intermediate iliac and supraclavicular capillaries are also the capillaries most commonly affected by atherosclerosis, intermittent claudication of the calf is a source of discomfort. The nearest sites of involvement are the proximal aortic and its fork through the dual brachial artery. The narrowing of the arteries might cause buttocks or thighs and legs pain.

According to epidemiological studies, recurrent septic arthritis affects up to 5% of men and 2.5% of people aged 60 and up 27. When the diagnosis of vascular failure in asymptomatic and symptomatic persons is made using sensitive non-invasive diagnostics, the prevalence is at least thrice higher²⁸. The symptoms of chronic lower extremity artery failure progress quite slowly. More than 70% of patients reported no symptom changes, but more than 20% to 30% of patients had increasing and severe symptoms, but less than 10% required surgery after five to ten years.²⁹ Despite the largely positive outlook for the affected limb, recurrent leg pain symptoms must be considered a sign of regional fibrosis. This explains why, in individuals with claudication, cardiovascular death rates have tripled when compared to the time of life controls [25].

4. CONCLUSION

Peripheral Arterial Disease (PAD) is a prevalent illness among the elderly that can result in long-term pain, amputation, and death. Peripheral arterial disease is caused by ischemia (lack of blood flow) in the lower extremities. Atherosclerosis, one of the most frequent illnesses that affect the entire cardiovascular system rather than the blood arteries of the lower limbs, is the most common cause in the vast majority of cases. As a result, all individuals with signs of peripheral arterial disease should be assessed for the risk of developing atherosclerosis.

Peripheral artery disease can be as simple as intermittent claudication, a pain in the legs and feet caused by exertion but goes away when the individual rests. When infarction is prolonged, urgent, or severe and is accompanied by perfused or obstructed blood arteries, peripheral artery disease raises the risk of tissue necrosis (gangrene), amputation, and early death.

CONSENT

While preparing a case report and for publication patients, informed consent has been taken.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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