

Case study

Case Report on Peripheral Arterial Disease

Abstract: Peripheral artery disease is a frequent cardiovascular ailment in which blood flow to our limbs is restricted by constricted arteries. When we have Peripheral Artery Disease in our limbs, our legs haven't had enough flow of blood to increase production. Peripheral vascular disease the capillaries that nourish the lower legs narrow and stiffen in peripheral vascular disease, making it harder to walk. 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 lesion. 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 is mandatory.

:A 65-year-old man was admitted to the hospital with the following symptoms: worsening left calf severe 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. On physical examination, the lower extremity pulse was diminished or absent, but all other vital signs were normal. Pulses in the left dorsalis pedis and posterior tibialis could not be felt. The results of the cardiac examination were normal. The patient has numbness in one leg, pain in both legs, decreased energy in both upper and lower limbs, ulceration, and gangrene in the lower extremities, Hair loss, weakness, and dependent rubor (redness caused by swelling) are all present. He had audible bruits, a nonhealing lower extremity wound, and delayed capillary refill, so treatment was started 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

INTRODUCTION:

PED is an abnormally reduced arterial disease other than the arteries supplying the heart or brain.^{4,13} In the case of narrowing, it is referred to as a coronary artery condition, and the 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.^{3,15} The classical symptom, known as intermittent claudication, are leg pain during walking.¹ 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, disease of the coronary artery, or stroke, may be a complication.³ No symptoms occur in up to 50 percent of PAD sufferers.²

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 the age of 40 the most. ^{5,17} Arteriosclerosis, internal bleeding, injury, and psoriasis are some of the other causes..^{4,16} PAD is often diagnosed by a systematic blood pressure divided into an arm's blood systemic knee pressure (ABI) of less than 0.90 diagnosis.⁸ Ultrasound and angiography duplex can also be employed.⁷ Angiography is more precise and at the same time allows the treatment; yet, it is more vulnerable.⁸

Because it has not been thoroughly explored, it is unclear if monitoring for peripheral artery disease is beneficial in persons who have no symptoms. ^{17,18,19} Patients with intermittent claudication due to PAD benefit from smoking cessation and coordinated exercise therapy.^{10,11} Aid can also be provided by medication such statins, ACE inhibitors and cilostazol.^{11,20} Increased risk of heart attacks does not seem to help people who suffer from minor disease, but is often suggested for people with more substantial condition.^{17,21,22} No benefit is usual for anticoagulants such as warfarin.²³ The treatment of the condition includes grafting, angioplasty and atherectomy procedures.⁹

Some 155 million people globally have PAD in 2015.¹² Age is becoming more prevalent.²⁴ 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 industrialised world among men and women; however, women are most often affected in the underdeveloped world.⁶ In 2015 PAD led to around 52,500 fatalities, up from 16,000 in 1990.^{13,25}

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. With relatives, neighbours, and other family members, he and his family had good interpersonal relationships. When he is admitted, he has a fever of 102⁰ degrees Fahrenheit. Blood test, RBS 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.

PHYSICAL EXAMINATION:

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

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 haemoglobin 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 haemoglobin 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.

MEDICAL MANAGEMENT:

The patient is oriented with person and place upon admission; however, after treatment, he shows no response to 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, normal saline IV OD, Ceftriaxone 750 mg IV BD, Plavix (Clopidogrel)-300 mg dose followed by 75 mg for 14 days up to 12 months, normal 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 orally administered as per physician orders.

NURSING MANAGEMENT:

Peripheral Arterial Disease treatment 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 respond to treatment in any way. To help the patient with peripheral arterial disease, the nurse will need to work diligently. 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 is a measurement of the pressure between the ankle and the wrist (ABPI). The femoral, popliteal, and foot pulses are all examined. According to 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

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 dependant position
- Encouraged him to take adequate rest
- Provided him diversional therapy such as reading books Administered Inj. Morphine 5 mg every 6 hourly and Inj. Febrinil 1 gm every 6 hourly for pain management
- outcome: He verbalizes reduction of pain.

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 post- operative course of recovery.

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

Interventions:

Assessed the level of anxiety Provided him spiritual and psychological support by counseling and by explaining 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 own 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 theater to calm him and to

Evaluation: He verbalized reduction in anxiety level and was less agitated 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

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 for 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 toe nails were trimmed short
- Provided ArtAassist therapy to improve the peripheral circulation

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

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. He was diagnosed with Peripheral arterial disease after all of the tests and examinations. He has not improved since receiving treatment, 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 a middle-class family background. Both communicable and non-communicable diseases were absent in his family. With relatives, neighbours, and other family members, he and his family had good interpersonal relationships. 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 at relaxation, the blood supply to your lower extremities is reduced, which is a result of the atherosclerotic procedure. A range of symptoms are present, whose severity varies on the extent of their participation and the collateral circulation accessible. As a result, the problems can occur from ischaemia 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 also its fork through into dual brachial artery. The narrowing of the arteries might cause buttocks or thighs and legs pain.

Recurrent septic arthritis affects up to 5% of men and 2.5 percent of people aged 60 and up, according to epidemiological studies.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 higher.²⁸ 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 time of life controls²⁷

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 affects 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, which is pain in the legs and feet that is 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. Because atherosclerosis, the main cause of peripheral artery disease, may develop for a long time before generating some visible manifestations, the number of people who have it is unknown. Peripheral arterial disease affects roughly 10% of persons over 60, and the risk increases as you get older. Invasive operations to improve flow of blood in patients with various forms of peripheral artery disease account for half of all invasive procedures performed each year (more than 5000). Due to a medical condition, the patient is unable to stand. After the required tests and labs were completed, it would be diagnosed. The patient received the most effective treatment from the nurses. After a full recovery, the patient's comprehensive health care team collaborates to help the patient regain his or her previous level of independence and satisfaction.

Ethical Approval:

Not applicable

PATIENT INFORM CONSENT:

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

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