Nursing Care for Patients with Acute Arterial Ischemic Disorders of the Lower Extremity

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Epidemiology

• Leg ulcers are estimated to occur in 1 of every 100 people living in an industrialized society.¹

• An estimated 25% of leg ulcers are caused by problems with arterial circulation.²

• These conditions are more common among older women.

• Therefore, as society ages, more patients are likely to present with arterial ulcers

Presentation

• Patients with arterial ulcers may complain of leg cramping, aching, fatigue, weakness and frank pain in the buttocks, calves or thigh

• In most cases, these symptoms occur with exercise and resolve in about 10 minutes with rest.\(^3,4\) This presentation is known as intermittent claudication

• More likely they are likely to complain of pain across the forefoot when their foot is level to their heart (rest pain)
Etiology

- Atherosclerosis is the most common disease process implicated in the development of arterial ulcers.\(^4\,^5\)
- Many people who present with lower extremity arterial disease (LEAD) may also have medical histories that include:
  - coronary artery disease
  - cerebrovascular disease
  - reveal a history of smoking
  - Hypertension
  - Diabetes
- Nicotine can cause significant vasoconstriction, thereby reducing blood flow.
- Systolic hypertension causes significant changes in blood vessel walls
- Diabetes mellitus may hasten the progression of arterial disease by contributing to plaque formation
- Insulin resistance contributes to the hypertrophy of smooth muscle.
Assessment

• Pain is a common complaint among patients with arterial ulcers.
  • Often referred to as the fifth vital sign
  • Pain may occur at rest or at night

• Patients with arterial ulcers often report that elevation usually exacerbates the pain, while placing the limb in a dependent position usually relieves the pain.\textsuperscript{3-5}

• Arterial ulcers are most common on the;
  • lateral malleolus
  • the mid-tibial area (otherwise referred to as the shin)
  • the phalangeal heads
  • the tips of the toes, and web spaces of the feet.\textsuperscript{3}
Appearance and Cause

• These ulcers are usually pale in appearance and may have eschar and necrosis within them.\textsuperscript{3,4}
• Arterial ulcers rarely produce much exudate, and they vary widely in size.\textsuperscript{3,4} They are always painful.
• Arterial ulcers may be infected.\textsuperscript{3,4}
• The origin of the wound is important to ascertain, since arterial wounds often begin after some type of trauma to the area.\textsuperscript{3,4}
• The skin around the wound (periwound) will appear shiny, thin, dry and taut
• Hair will be noticeably absent
• In addition, atrophy of subcutaneous tissue and muscle may be present.\textsuperscript{3,4}
• The skin will feel cool to the touch.
Nursing Care

• Take baths using tepid water, since water that is too hot may lead to skin damage (dry skin or worse, burns).
• Pat the skin dry; do not rub because skin injury may occur as a result of friction.
• Apply a moisturizer daily, but avoid putting creams and lotions in web spaces between the toes.
• Inspect the skin daily by using a handheld mirror to see the bottom of the feet or the posterior calves. Inspect for changes or new lesions.
• Podiatrists or someone trained in foot and nail care should cut toenails or trim calluses.
• Make sure shoes fit properly; shoes that are too tight may cause further skin breakdown. If shoes are too loose, they may contribute to friction, causing blisters.
• Never walk barefoot. Given the poor sensation in their foot or leg, they may not be aware of an injury until the area becomes infected.
Infection must be addressed promptly if the patient presents with cellulitis or symptoms of critical limb ischemia. Cultures of the wound must be performed, followed by the initiation of systemic antibiotics. While tissue biopsy is still considered the gold standard, swab cultures have proven to be a good alternative in many settings. Symptoms of infection maybe subtle, secondary to decreased blood flow. These symptoms include increased pain, edema and redness as well as induration of the area surrounding the wound. When the wound presents with drainage and bone or tendons are exposed, consider the use of an absorbent, moist, nonocclusive dressing. Regular dressing changes with assessment are necessary to ensure that the wounds are not deteriorating.
Arterial Wound Care - BASICS

When the wound presents as draining and has necrotic tissues present, a trial of debriding agents, either autolytic or enzymatic type, may be considered.\(^3,5\)

The final point to examine and consider is whether wound is covered with dry, stable eschar. If this is the case and the wound shows no signs or symptoms of infection, every attempt should be made to maintain the wound.

**Sharp debridement is not used in these situations.**\(^3,5\)

Any perfusion of the wound should be addressed as previously discussed. Ultimately, the clinician must weigh all the information available to develop a plan of care specific for the patient.
Wound care decisions are driven by:

- the amount of disease present
- whether or not the limb requires revascularization
- and the presence or absence of infection.

Every patient with an arterial wound should consult with a vascular surgeon. The surgeon will explore the need for revascularization and may order angiography to further assess the patient.
Education

Education should begin with smoking cessation.\(^3\)

For all patients, stress the importance of adequate hydration and good nutrition.\(^3\)

Physical activity is another frequently overlooked component of a comprehensive treatment plan for arterial ulcers.

Always perform a comprehensive medication review with the patient.

Seize this opportunity to help the patient understand the importance of controlling blood pressure, keeping blood sugar under control and managing his or her cholesterol.
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