

Purulent Cellulitis In A 50-Year-Old Patient With A History Of Hypertension

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Abstract

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Background:

Cellulitis is an acute diffuse bacterial infection involving the dermis and subcutaneous tissue. It may be classified as purulent or non-purulent cellulitis. Lower-extremity involvement is common, and comorbid vascular disease or impaired circulation may increase the risk of infection.

Case Description:

A 50-year-old woman presented to the emergency department with left leg pain, fever, swelling, erythema, and purulent ulcers. She had a history of hypertension and was not taking medication regularly. Physical examination revealed blood pressure of 181/86 mmHg, left crural ulcers with slough and necrotic tissue, and pitting edema. Laboratory examination showed leukocytosis, while chest radiography showed cardiomegaly with aortic calcification. The patient was diagnosed with suspected peripheral arterial disease accompanied by purulent cellulitis. She received intravenous antibiotics, analgesics, supportive therapy, wound care, and incision of bullae during hospitalization, with clinical improvement.

Conclusions:

Purulent cellulitis requires prompt recognition and treatment. Ulcers may serve as a portal of entry for skin flora, while hypertension and vascular compromise may contribute to impaired tissue perfusion and edema. Antibiotic therapy, drainage when indicated, wound care, and bacterial culture for definitive therapy are important components of management.

Introduction

Cellulitis is an acute diffuse skin infection involving the dermis and subcutaneous tissue. It is broadly divided into purulent and non-purulent cellulitis. Purulent cellulitis is characterized by pustules, abscess, or purulent discharge, whereas non-purulent cellulitis lacks these findings.¹ Cellulitis can occur in any body region, although the lower extremities are the most commonly affected site. The most frequent causative bacteria are gram-positive cocci, particularly *Streptococcus* spp. and *Staphylococcus aureus*.²

Cellulitis can affect all age groups, but it is more common among middle-

aged and older adults. Several risk factors may predispose to cellulitis, including skin trauma, iatrogenic wounds, insect bites, and comorbid disease. Diabetes mellitus is commonly recognized as a major comorbidity, while other vascular conditions such as venous insufficiency and peripheral arterial disease may also increase risk.^{3,4}

Hypertension may contribute to peripheral arterial disease and impaired blood flow, which may predispose patients to edema, poor wound healing, and infection.⁵ This report describes a 50-year-old woman with purulent lower-limb cellulitis and a history of hypertension.

Case Description

A 50-year-old woman presented to the emergency department of Hosana Medica Hospital, Cikarang, with left leg pain since the previous day. The pain was initially intermittent, felt like being stabbed by a sharp object, and later became persistent, prompting the patient to seek emergency care. There were no specific aggravating or relieving factors. The complaint was accompanied by fever, warmth, swelling, and erythema of the left leg. The patient also had ulcerative wounds with whitish-yellow pus. She had undergone debridement by an orthopedic specialist three months earlier. The patient had a history of hypertension but did not take medication regularly; diabetes mellitus was denied.

Vital sign examination showed blood pressure of 181/86 mmHg. Systemic physical examination was within normal limits. Local examination demonstrated irregular ulcers in the left crural region measuring approximately 10 cm x 10 cm and 7 cm x 6 cm, with slough, necrotic tissue, and pitting edema. The ankle-brachial index was 1.08 on the right leg and 1.22 on the left leg. Laboratory examination showed leukocytosis. Chest radiography showed cardiomegaly with aortic calcification, while electrocardiography was within normal limits.



Figure 1. Clinical appearance of left leg ulcers.



Figure 2. Chest radiograph showing cardiomegaly and aortic calcification.

The patient was diagnosed with suspected peripheral arterial disease accompanied by cellulitis. She received Ringer lactate infusion, ketorolac 30 mg every 8 hours, ranitidine every 12 hours, ceftriaxone every 24 hours, metronidazole 500 mg every 8 hours, furosemide every 12 hours, proxime 100 mg once daily, and orthopedic consultation. The orthopedic specialist recommended stabilization of the patient's condition before further intervention. The patient was hospitalized for several days and showed clinical improvement. During hospitalization, bullae appeared on the left leg and were managed by bulla incision and daily dressing changes.



Figure 3. Clinical appearance of the left leg during treatment.

Discussion

This case describes a 50-year-old woman diagnosed with purulent cellulitis and suspected peripheral arterial disease. Cellulitis is an acute bacterial infection of the skin, particularly the dermis and

subcutaneous tissue, and may also spread to lymphatic tissue. Common clinical findings include localized swelling with poorly demarcated borders, erythema, warmth, and pain. Although cellulitis most commonly affects the lower extremities, it may occur in any body region. The most common causative bacteria are group A and G beta-hemolytic *Streptococcus* and *Staphylococcus aureus*.^{6,7}

Cellulitis is a common skin and soft tissue infection. In the United States, approximately 14 million cases are reported annually, and it is frequently encountered among middle-aged and older individuals. In Indonesia, national prevalence and incidence data are limited; however, one study at Dr. Cipto Mangunkusumo Hospital reported 24.6 cellulitis cases per 1,000 population per year, with higher incidence among individuals aged 45-65 years.^{7,8} The patient in this case was a 50-year-old woman with a history of hypertension, which was consistent with the epidemiological profile described in previous studies.

The pathophysiology of cellulitis begins with disruption of the skin barrier, which allows normal skin flora and pathogens to enter the dermis, subcutaneous tissue, and lymphatic system. This process triggers an immune response involving cytokines and neutrophils, antimicrobial peptide production, and keratinocyte proliferation. Skin disruption may occur due to puncture wounds, surgical incisions, insect bites, ulcers, or other trauma. Comorbid conditions such as hypertension, diabetes mellitus, venous insufficiency, peripheral arterial disease, and lymphedema may increase cellulitis risk.^{3,9}

Hypertension may impair circulation and contribute to vascular disease, which can reduce tissue perfusion and promote venous stasis or edema. In

this patient, ulceration served as a portal of entry for normal skin flora, while edema and possible vascular compromise may have supported progression of infection. The presence of pain, fever, warmth, edema, and erythema in the left leg was clinically compatible with cellulitis. Bullae developed during hospitalization, likely related to severe edema and inflammation.

The main treatment for cellulitis is antibiotic therapy because the underlying process is bacterial infection. Intravenous antibiotics are recommended when systemic symptoms, severe infection, or relevant comorbidities are present, whereas oral antibiotics may be considered for patients without systemic manifestations or significant comorbidity.^{3,7,10} For purulent cellulitis, incision and drainage are important when abscess, bullae, or pus collection is present, both for source control and for obtaining pus samples for culture. Elevation of the affected limb, analgesics, anti-inflammatory treatment, and wound care are additional supportive measures.

In this case, ceftriaxone was administered in combination with metronidazole because of available facility considerations. Ketorolac was used for pain control, furosemide was used to reduce swelling, and proxime was given to reduce the risk of thrombosis related to vascular stasis. A bacterial culture was not performed because of limited resources and facilities. Nevertheless, culture would have been useful to identify the causative organism and guide definitive antibiotic therapy.

Conclusion

A 50-year-old woman presented with left leg pain accompanied by

erythema, swelling, fever, and purulent ulcers, consistent with purulent cellulitis. The ulcer likely served as the portal of entry for skin flora, while hypertension and suspected vascular compromise may have contributed to edema and impaired tissue perfusion. Purulent cellulitis requires prompt treatment with antibiotics, adequate wound care, and incision or drainage when indicated. Bacterial culture is recommended when possible to identify the causative organism and guide definitive antibiotic therapy.

Acknowledgement

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