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Symmetrical Peripheral Gangrene, a Serious Complication of Sepsis

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Abstract Symmetrical peripheral gangrene (SPG) is a rare but devastating complication of septicemia, with a high mortality rate. About half of the patients who survive require amputation of the affected limb. The common etiologies include both infective and non-infective etiologies. Aggravating factors include asplenia, immunosuppression, and previous cold injury to extremities, diabetes mellitus, renal failure, increased sympathetic tone and use of vasopressors. [1] SPG is defined as symmetrical distal ischemic damage at two or more sites in the absence of large vessel obstruction or vasculitis, sometimes used synonymously as purpura fulminans. Disseminated intravascular coagulation (DIC) and hemorrhagic infarction of skin with uninvolved proximal arteries are hallmark of this condition [2].

Keywords: *symmetrical peripheral gangrene , septicemia*

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1. Case Report

1.1. Learning Objectives

1) To recognize symmetrical peripheral gangrene as a rare cutaneous manifestation of sepsis
2) To recognize the high mortality associated with this condition and need for early intervention.

1.2. History of Present Illness

The patient is an 80 year old female who presented to the Emergency Department with complaints of generalized weakness, dysuria, abdominal pain and lethargy of four days duration. Her vitals on arrival were T 99F, BP 71/48 mmHg, HR 91 bpm, RR 20 bpm with SpO2 94% on room air.

1.3. Past Medical History

HTN and colon cancer s/p surgery.

1.4. Physical Examination

Her physical examination was unremarkable except for the presence of diffuse abdominal tenderness without guarding.

1.5. Laboratory values

Laboratory values were significant for Hb 12 g/dl, WBC 16.8, platelets 76, INR 1.3, PTT 39, d dimer 248, fibrin split products 160 and peripheral smear showed schistocytes. Blood cultures grew E.coli.

1.6. Hospital Course

She was diagnosed with septic shock from urinary tract infection. Her initial management comprised of Vancomycin and Zosyn in addition to fluids and nor epinephrine. On the second hospital day, her hands and feet were cold to touch with peripheral cyanosis at the tips of all the fingers except the thumb and all the toes and associated with pain. The cyanosis progressed to gangrene at the finger tips by day 5. Her peripheral pulses were well palpable throughout. The nor-epinephrine was weaned but could be discontinued only on day 5. Despite the aggressive management, the patient succumbed on hospital day 11.

1.7. Images

Picture 1.

Picture 2.

Picture 3.

Picture 1, 2 and 3 showing symmetrical peripheral gangrene involving hands and feet.

2. Discussion

The exact pathogenesis is unknown but low flow states coupled with endothelial damage in association with hypercoagulable state leads to micro- circulation occlusion.

The etiologies could be myriad with bacterial, viral or parasitic infection versus non infective causes like cardiogenic shock, massive pulmonary embolism, and use of vasopressors, paraneoplastic syndrome, auto immune disorders and various malignancies.

By far bacterial septicemia is the most frequent cause and lead to considerable morbidity and mortality.

DIC is associated in majority of cases and is the final common pathway of micro- circulation occlusion.

SPG should be suspected at the first sign of marked coldness, pallor, cyanosis or pain in the extremity, as the condition can progress rapidly to acrocyanosis and, if not corrected to gangrene. The ischemic changes begin distally but soon may progress proximally to involve the whole limb.

These changes are associated with intact distal pulses as confirmed by Doppler study because the large vessels are often spared. The peripheral extremities, tip of the nose, scalp and genitalia are areas most commonly affected. Patients usually have features of hypotension and shock. The laboratory investigation is directed towards determining the underlying cause. It may include septic screen, DIC and auto antibody panel and evaluation of arterial circulation with Doppler's.

Pathologic examination of amputated specimens often reveals thrombi concentrated in the small vessels with sparing of large vessels.

The treatment is supportive and is focused to the underlying etiology.

No treatment is universally effective. Early recognition and immediate discontinuation or reduction, if possible, of vasopressor therapy (as it aggravates the low-flow state by enhancing vasoconstriction) and vigorous therapy of sepsis and DIC with intravenous antibiotic therapy and heparinization are essential components of SPG management [3].

In extreme cases amputation of gangrenous area may become necessary to save life.

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