Retiform purpura and ischemic limb gangrene with pulses

**Qiang Nai, Rafay Khan, Sabrina Arshed, Shuvendu Sen,
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ABSTRACT

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CASE REPORT

A 48-year-old female with a history of alcoholism was admitted for septic shock. She had vomiting, diarrhea, and confusion of one day duration prior to admission. Vital signs were blood pressure 84/54 mmHg, pulse 125 bpm, respiratory rate 22/minute, temperature 35.7°C; physical examination revealed confusion and hallucination; diffuse rash and edema over the face, neck and shoulders, which were preceded by insect bites to upper eyelids. Initial laboratory tests showed hemoglobin 12.6 g/dL, hematocrit 38.9%, white blood cell count $17.5 \times 10^3/\mu\text{L}$, platelet $102 \times 10^3/\mu\text{L}$, band 52%, d-dimer $>35.2 \mu\text{g/mL}$, fibrin degradation product $>20 \mu\text{g/mL}$, fibrinogen 209 mg/dL, IgE 1,732 IU/mL, troponin I 1.08 ng/mL, creatinine kinase (CK) 5,933 IU/L, CK-MB 49.55 ng/mL, INR 1.3, sodium 126 mmol/L, potassium 3.1 mmol/L, chloride 87 mmol/L, bicarbonate 9 mmol/L, BUN 12 mg/dL, creatinine 1.3 mg/dL, glucose 120 mg/dL, calcium 7.0 mg/dL, magnesium 1.0 mg/dL, phosphorus 6.5 mg/dL, albumin 2.2 g/dL, alcohol 26.7 mg/dL, total bilirubin 1.3 mg/dL, alkaline phosphatase 71 U/L, AST 111 U/L, ALT 43 U/L. Arterial blood gas showed: pH 7.12, PCO_2 22 mmHg, PO_2 120 mmHg, bicarbonate 7.2 mmol/L, FiO_2 27%. The lungs were clear on chest X-ray, EKG showed sinus tachycardia, and echocardiogram was normal. The test results suggested rhabdomyolysis and

disseminated intravascular coagulopathy (DIC) that was likely triggered by bacterial endotoxin related to facial infection. However, the microbiology studies were negative.

Patient was given broad spectrum antibiotics including vancomycin, piperacillin (that was subsequently switched to imipenem), fluconazole, acyclovir, as well as permethrin cream pediculosis capitis. Aggressive intravenous fluid and multiple vasopressors were administered to maintain the blood pressure. Fever and acute respiratory distress syndrome occurred shortly after admission, and she was subsequently intubated. The upper eyelid and radix evolving necrosis (Figure 1A) necessitated multiple debridements. Retiform purpura developed in hands (Figure 1B) blisters on dorsum and feet (Figure 1C) despite detectable pulses (cross marks). Thrombosed plantar cutaneous veins became apparent six days after admission. Skin punch biopsy and subsequent histology study revealed mild fibrinoid necrosis of the upper dermis and bulla formation with complete separation at the epidermal junction. Ischemic limb gangrene with pulses occurred in the lower extremities (Figure 1D–E), which led to bilateral below knee amputation.

Figure 1: (A) Evolving necrosis in eyelids, retiform purpura in (B) hands and (C) feet, (D, E) ischemic limb gangrene with pulses in the lower extremities.

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DISCUSSION

We report a case of ischemic limb gangrene with pulses in a female patient who was initially admitted for septic shock. Although she was treated aggressively with broad spectrum antibiotics, unfortunately the gangrene eventually led to bilateral lower extremity amputation. Therefore, it is critical to recognize this disorder early and provide immediate management. Ischemic limb gangrene with pulses can result from DIC, calciphylaxis, and atheroembolism [1, 2]. In our case, the focal facial skin infection was very likely the cause of the toxic shock syndrome (TSS) and the resultant DIC, which subsequently led to shock, microvascular thrombi in various organs, retiform purpura, and dry gangrene in the limbs [3, 4]. Furthermore, the vasoconstriction due to multiple vasopressors may have aggravated the development of ischemic necrosis and limb gangrene [5].

In cases of ischemic limb gangrene, the existence of pulse should be determined first, and subsequent evaluation should assess the occurrence of DIC [2]. Furthermore, the early recognition of microthrombosis-associated ischemic injury can be facilitated by two clinical signs. One is the presence of retiform purpura, which is purpuric instead of erythematous. The second sign is the absence of induced bleeding upon puncturing a purpuric skin area to 3–4 mm in depth [6].

CONCLUSION

Toxic shock syndrome (TSS) associated with focal infection can lead to disseminated intravascular coagulopathy (DIC) and ischemic limb gangrene with pulses. Recognition of early signs and prompt treatment of the underlying disease and complications may help prevent severe consequences such as ischemic limb gangrene and amputation.

Keywords: Limb gangrene, Retiform purpura, Skin punch biopsy, Toxic shock syndrome

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Qiang Nai – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Rafay Khan – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Sabrina Arshed – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Shuvendu Sen – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

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The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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