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Case Report

Subacute Lethal Bilateral Leg Time-Lag Infection by *Streptococcus dysgalactiae*

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Abstract

A 66-year-old man felt left leg pain 7 days prior to admission to our hospital. His history included diabetes mellitus, hypertension, alcoholic live disease and chronic renal failure without hemodialysis. He drank 90 g of ethanol per day. As the pain gradually became exacerbated, he visited a local clinic on foot. The chemical laboratory analysis showed thrombocytopenia, so he was admitted to our department. On arrival, his consciousness was clear, and he had stable vital signs. He had bilateral lichen legs, and the left leg showed swelling, tenderness and redness. Computed tomography revealed a high-density area of soft tissue in the left leg. The patient was treated with meropenem and linezolid. On the second hospital day, he felt improvement of pain in his left leg, but began to feel pain in his right leg. He had oligouria. The same day, his blood pressure and respiratory function deteriorated, and both legs became red with purpura. He died on the third hospital day. *Streptococcus dysgalactiae* was detected in the blood and skin of his left leg cultures. We herein report a unique case of invasive *Streptococcus dysgalactiae* infection. Elderly patients with underlying diseases, who might have a soft tissue infection, may require early aggressive debridement of the infected tissue, in addition to performing prophylactic decontaminated measurements of the uninfected area.

Keywords: Streptococcus dysgalactiae; Bilateral leg infection; Fatal

1. Introduction

Streptococcus dysgalactiae infection can range in severity from relatively mild skin and soft-tissue conditions, such as wound infection, erysipelas, and most commonly cellulitis, to life-threatening necrotizing fasciitis and

streptococcal toxic shock syndrome [1]. Invasive forms of this infection are most commonly found in elderly patients with underlying comorbidities and skin breakdown [1]. We herein report a patient with alcoholic liver disease, chronic renal failure, diabetes mellitus and hypertension who suffered from the subacute onset of lethal soft tissue infection of the bilateral legs induced by *S. dysgalactiae*.

2. Case Presentation

A 66-year-old man felt left leg pain 7 days prior to admission to our hospital. His history included diabetes mellitus, hypertension, alcoholic liver disease and chronic renal failure without hemodialysis. He drank 90 g of ethanol per day. He had received prescriptions for irbesartan amlodipine besilate, atenolol, teneligliptin, pioglitazone and ursodeoxycholic acid. As the pain gradually became exacerbated, he visited a local clinic on foot.

The chemical laboratory analysis showed thrombocytopenia, so he was admitted to our department. On arrival, his consciousness was clear. A physical examination revealed the following findings: blood pressure, 108/57 mmHg; heart rate, 76 beats per minute (BPM); respiratory rate, 22 BPM; SpO_2, 94% under room air; and body temperature, 37°C. His bilateral legs had lichen, suggesting a history of inflammation. In addition, the left leg had swelling, tenderness and redness. A venous gas analysis revealed the following findings: pH, 7.351; PCO_2, 29.9 mmHg; PO_2, 40.0 mmHg; HCO_3^-, 16.1 mmol/L; base excess -7.9 mmol/L; and lactate, 5.0 mmol/L. Electrocardiography revealed sinus tachycardia. Chest roentgenography revealed cardiomegaly. Whole-body computed tomography revealed a high-density area of soft tissue in the left leg (Figure 1). The main results of a blood analysis were as follows: white blood cell count, 4,600/mm^3; hemoglobin, 13.0 g/dL; platelet count, 2.9×10^4/mm^3; total protein, 6.7 g/dL; albumin, 2.9 g/dL; total bilirubin, 2.1 mg/dL; aspartate aminotransferase, 53 IU/L; alanine aminotransferase, 25 U/L; creatine phosphokinase, 123 IU/L; amylase, 60 IU/L; lactate dehydrogenase, 397 IU/L, blood urea nitrogen, 58.9 mg/dL; creatinine, 3.25 mg/dL; glucose, 127 mg/dL; HbA1C, 6.2%; sodium, 135 mEq/L; potassium, 4.8 mEq/L; chloride, 108 mEq/L; C-reactive protein, 22.9 mg/dL; activated partial thromboplastin time, 34.0 (24.9) seconds; prothrombin time, 14.1 (11.9) seconds; and fibrinogen degradation products, 104 μg/mL.

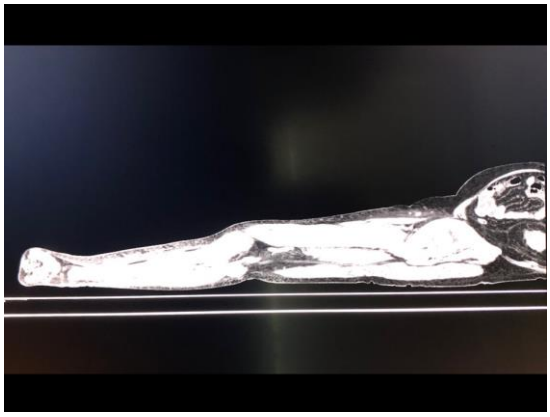

Figure 1: Computed tomography (CT) of the left leg on arrival. CT revealed a high-density area of soft tissue in the left leg.

As cellulitis was initially suspected, the patient was treated with meropenem and linezolid in the general ward after blood samples were obtained for culturing. On the second hospital day, he reported improvement of the pain in the left leg; however, began to feel pain in his right leg. His urinary output per night was almost 0 ml. That same afternoon, his blood pressure and respiratory function deteriorated, so he was moved to the intensive-care unit, and tracheal intubation was performed in addition to the infusion of noradrenalin and massive infusion of Ringer's lactate solution. In addition, both legs became red with purpura (Figure 2). We recommended both of his legs be amputated, but his family refused to consent to the operation. His respiration and circulation became unstable, and he ultimately died on the third day of hospitalization. *S. dysgalactiae* was detected in the blood and skin of his left leg cultures. We were unable to obtain permission to perform an autopsy.

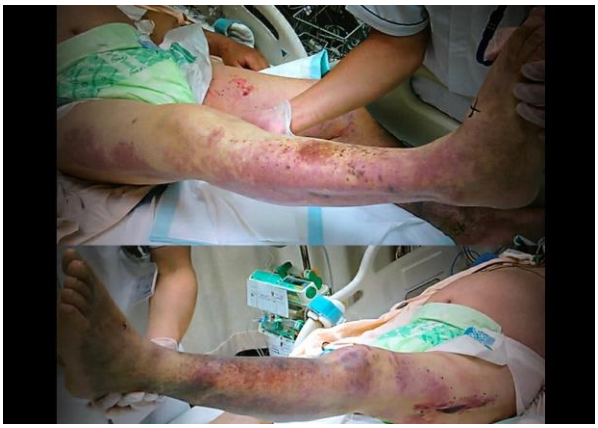

Figure 2: Bilateral legs on the second hospital day. Both legs developed redness with purpura.

3. Discussion

The present case has three unique points. The first point is the time course of the disease. While invasive *Streptococcus* infection is typically rapid, the time course of the present case was more than one week [1-3]. The second point is the time-lag infection of the bilateral legs in a single subject. The present patient initially reported improvement of his subjective symptoms in the left leg, but the opposite leg also was found to be infected on the eighth day, leaving both legs ultimately infected. This suggested the ping-pong transmission of *Streptococcus* infection between the two legs in the same subject [4]. The third point is the timing of amputation. The present patient had stable vital signs initially, and the color of his skin resembled that associated with cellulitis. Accordingly, we selected conservative treatment with antibiotics. While the initial response to the treatments was good for the left leg, the opposite leg subsequently became infected. We believed that the condition of the opposite leg would similarly be improved by antibiotic treatment, but this approach failed.

Bilateral and simultaneous lower extremity amputations unrelated to diabetes, peripheral vascular disease and trauma are uncommon [5, 6]. Bilateral amputation in the late phase of purpura fulminans has been reported, but the efficacy of such a procedure in the acute setting is poor [7, 8]. We were unable to find any reports of cases that obtained a survival outcome after bilateral amputation following invasive *S. dysgalactiae* infection [9].

Invasive forms of this infection are most commonly found in elderly patients with underlying comorbidities and skin breakdown [1]. Accordingly, elderly patients with underlying diseases, who might have soft tissue infection, may require early aggressive debridement of the infected tissue, in addition to performing prophylactic decontaminated measurements of the uninfected area.in order to obtain a survival and favorable functional outcome.

4. Conclusion

We encountered a unique case of invasive *S. dysgalactiae* infection. Elderly patients with underlying diseases, who might have soft tissue infection, may require early aggressive debridement of the infected tissue, in addition to performing prophylactic decontaminated measurements of the uninfected area.

Conflict of Interest

The authors declare no conflicts of interest in association with the present study.

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