Streptococcal Septic Arthritis and Necrotizing Fasciitis in an Intravenous Drug User Couple Sharing Needles

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The clinical spectrum of invasive infections due to group A *Streptococcus* mainly includes bacteremia, toxic shock syndrome, necrotizing fasciitis, and myonecrosis. In recent years, invasive group A *Streptococcus* infection has been increasingly recognized among intravenous drug users [1]. We report on a couple of IV drug users sharing needles who developed streptococcal necrotizing fasciitis simultaneously.

Patient Description

Case 1

A 38 year old man was hospitalized due to pain in his left arm. His medical history was remarkable only for intravenous heroin injection. On admission he appeared ill, blood pressure was 100/60 mmHg, pulse 130/minute, respiratory rate 14/min, and rectal temperature 36.3°C. On examination, swelling, redness and tenderness of the left arm and shoulder were noted. Laboratory studies revealed leukocytosis of 14,000/mm^3 (92% neutrophils), hemoglobin 13 g/dl, platelets 116,000/mm^3, urea 151 mg/dl, sodium 128 mEq/L, and creatine kinase 1,920 U/L. Human immunodeficiency virus serology was negative. An X-ray of the left shoulder was normal. Arthrocentesis of the left shoulder yielded a small amount of hemorrhagic fluid that was cultured. Determination of the fluid's cell count was not feasible. Blood cultures were obtained, and empiric therapy with intravenous cefuroxime was initiated.

On the following day, severe sepsis ensued with metabolic acidosis and altered mental status. The left arm was warm, tender and edematous, with bullous eruption, but no crepitus. Necrotizing fasciitis was suspected and emergency fasciotomy was performed revealing acute inflammation and necrosis of both fascia and muscles. Blood, synovial fluid and wound cultures all grew group A *Streptococcus* (M-protein serotype 28 and T-type 11). An echocardiogram was normal. High dose penicillin G and clindamycin were given. Necrotizing fasciitis and myonecrosis subsequently appeared in the right arm and left leg. The patient developed multiorgan dysfunction syndrome, rhabdomyolysis, and hypothermic septic shock. Despite maximal supportive therapy, repeated surgical debridement and administration of intravenous gammaglobulins, the patient died on the sixth day.

Case 2

During the fifth day of the index patient's hospitalization, a 32 year old woman was admitted with a 10 day history of fever and a painful and swollen left knee. She had been taking oral cefuroxime-axetil for a week prior to admission. Her medical history was remarkable only for intravenous heroin injection. It appeared that she was the index patient's spouse and admitted that they had been regularly sharing needles.

On examination the patient was alert and oriented; temperature was 39.1°C, pulse 120/min, blood pressure 120/70 mmHg, and respiratory rate 16/min. Examination revealed an erythematous, tender and swollen left knee. Initial blood tests were normal. The synovial fluid contained 18,700 leukocytes/ml, mostly neutrophils, consistent with partially treated septic arthritis. Ceftriaxone was administered.

Three days later, left calf swelling was noted. Doppler ultrasonography revealed left common femoral vein thrombosis and free fluid within the soft tissue of the left calf. Synovial fluid cultures subsequently grew group A *Streptococcus* and blood cultures grew group A *Streptococcus* and methicillin-resistant *Staphylococcus aureus*. All group A *Streptococcus* isolates exhibited an identical phenotype (M-protein serotype 28 and T-type 11). Subcutaneous enoxaparin and intravenous vancomycin were given, and fasciotomy revealed a purulent discharge along the fascial planes of the leg muscles without myonecrosis. The postoperative course was uneventful. Skin grafting was performed successfully and the patient was subsequently discharged and is doing well.

Comment

The classic risk factors for group A *Streptococcus* bacteremia are well established and include malignancy, diabetes, peripheral vascular disease, corticosteroid use, alcoholism, and chronic obstructive pulmonary disease [2]. Recently, intravenous drug abuse has emerged as a leading risk factor for group A *Streptococcus* bacteremia in young adults [1,2].

In the patients reported here, intravenous drug use was the only risk factor present and group A *Streptococcus* was allegedly transmitted from one patient to the other by sharing paraphernalia or possibly by contaminated drugs. Clustering of invasive group A *Streptococcus* infection has been previously reported [2,3], as were clonal outbreaks of needle abscesses [4,5]. However, to the best of our knowledge,

clustering of necrotizing fasciitis among IV drug users has not been previously described. Although molecular typing was not performed, physical and temporal relatedness and the identical phenotype shared by all clinical isolates support a common source for transmission. It is of note that M-type 28 has been frequently isolated from patients with invasive group A *Streptococcus* infection, as have M-types 1, 3 and 12 [2].

It is well known that streptococcal infection is highly contagious and that close contacts are at risk for colonization and/or infection [3]. This report confirms previous assumptions that disease severity among close contacts tends to parallel that of the index case. It is hypothesized that the fair clinical outcome of the second patient may be attributed to early administration of oral antibiotic therapy.

This report raises a provocative question of whether preventive antibiotic treatment should be given to close contacts of patients with invasive group A *Streptococcus* infection in general, and close contacts with known risk factors for invasive infection in particular. Given the grave outcome of streptococcal necrotizing fasciitis and myonecrosis (case fatality rates of 20–50% and 80–100%, respectively) [2], and the rising incidence of both invasive group A *Streptococcus* infection and intravenous drug use worldwide, this issue warrants urgent study.

References

1. Lentnek AL, Giger O, O'Rourke E. Group A -hemolytic Streptococcal bacteremia and intravenous substance abuse. Growing clinical problem? *Arch Intern Med* 1990;150:89–93.
2. Stevens DL. Invasive group A Streptococcus infections. *Clin Infect Dis* 1992;14:2–13.
3. DiPersio JK, File TM, Stevens DL, Gardner WG, Petropoulos G, Dinsa K. Spread of serious disease-producing M3 clones of group A streptococcus among family members and health care workers. *Clin Infect Dis* 1996;22:490–5.
4. Lechot P, Schaad HJ, Graf S, Tauber M, Muhlemann K. Group A Streptococcus clones causing repeated epidemics and endemic disease in intravenous drug users. *Scand J Infect Dis* 2001;33:4–6.
5. Bohlen LM, Muhlemann K, Dubuis O, Aebi C, Tauber MG. Outbreak among drug users caused by a clonal strain of group A streptococcus. *Emerg Infect Dis* 2000;6:175–9.

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