



Necrotizing Fasciitis of Right Upper Limb, Chest and Abdomen Due to Drug Injection

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Background

Necrotizing fasciitis is a rapidly progressive infection involving the subcutaneous tissue and superficial fascia. It is also a severe manifestation of cutaneous complications in injection drug users. The mortality of necrotizing fasciitis remains high (20%-80%), making early diagnose and surgical intervention particularly pivotal[1]. The association between necrotizing fasciitis and intravenous drug abuse is infrequently described in the previous literatures. In this study, we report a 41-year-old man with confession of heroin addict who developed necrotizing fasciitis with singular result of bacteria wound culture after illicit drug injection; also, review the previous literature.

Case Report:

A 41-year-old man, who confessed to having heroin injection into his bilateral upper arms 9 days prior to admission, presented with breathless and general weakness at emergency department. He had been addicted to heroin for 3 years, with a 7-day history of progressive pain and swelling in his both upper arms. He usually had injected drug mixed with tap water and reused the needle, but denied shared the needle with others. He denied the medical history of diabetes mellitus, liver cirrhosis or other immunodeficiency disease.

Physical examination revealed multiple wounds over right upper arm with skin necrosis (Fig.1), purulent discharge and swelling with surrounding erythematous change, which extended to right side of axilla, chest and abdominal wall. Locoregional cellulitis and skin necrosis were also demonstrated in left upper limb, which was considered as another drugs injection site. Drugs abuse screening test revealed positive in Methamphetamines (>500 ng/mL) and Opiates (>300 ng/mL) test. Laboratory values disclosed as following: white blood cell count, 4000/mm³ (10% band form); lactate, 68.9 mg/dL; C-reactive protein, 32.8 mg/dL; creatinine, 2.17 mg/dL; sodium, 119 mg/dL; hemoglobin, 15.9 g/dL; platelet, 65000/uL; creatine kinase, 19166 IU/L. Computed tomography (CT) revealed extensive soft tissue emphysema from right side visible neck to chest and abdominal walls which was highly indicated with severe soft tissue infection (Fig.2). *Prevotella nigrescens* was identified from culture of the infected area repeatedly. The Gram-negative anaerobes usually isolated from polymicrobial infections of periodontal origin; seldom reported as extra-oral infection. He had fasciotomy initially; and subsequently underwent consecutive debridements, wound dressing and antibiotic treatment synchronously. (Fig.3) Skin grafting or stepwise delayed primary closure were performed for the viable wound. He made a recovery and was discharged after months of treatment.

Discussion:

In Taiwan, approximately 1.43% of persons aged 12-64 years (252,000 people) used illicit drugs at least once[2]. The drug abuser may use a method termed "skin popping" or "muscle popping" to inject illicit drugs, especially cocaine and opiates, into the subcutaneous and muscle layer, with the goal of achieving slower absorption, decreased risk of overdose, and easier administration than with intravenous drug use [3]. The skin/ muscle popping method can lead to numerous soft tissue complication, including scarring, hyperpigmentation, skin necrosis and bacterial infection, which is frequently seen with various degree of severity. Cellulitis and pyomyositis in the drug abuser are frequently reported in the previous literatures[4-6].

Necrotizing fasciitis is one of the most severe manifestations of complications in these patients, which is usually a diagnostic dilemma for a clinician. For an injected drug user with progressive injected site infection, Necrotizing fasciitis should be always taken into concern to ensure timely fasciotomy and debridement.

Chen et al. review 59 patients of injection drug users who were diagnosed as necrotizing fasciitis and found the most frequent anatomical site of infection was left or right arm, which is consistent with the injecting behavior[4]. Our patient's infected site originated at right upper arm as an usual skin-popped site being a left-hander. The microbiological finding in injected drug user is often polymicrobial. *Staphylococcus aureus*, *Streptococcus pyogenes* and *Clostridium* species are common implicated pathogens [1, 4, 7]. Kimura et al. reported the 9 injection drug user developing necrotizing fasciitis due to *Clostridium sordellii* [8]. This organism was reported as the most commonly isolated anaerobic organism in injected drug user with necrotizing fasciitis [4]. Nevertheless, we identified *Prevotella nigrescens* from two sets of wound culture consecutively. *Prevotella nigrescens* is a Gram-negative anaerobes which is usually isolated from polymicrobial infections of periodontal origin [9]. This pathogen is seldom identified in extraoral infections; especially in a monomicrobial necrotizing soft tissue infection. We purpose the reused needle or tape water contaminated the injected heroin. *Prevotella nigrescens* is characterized as black pigment-producing colonies. The blackish purulent discharge conspicuously infiltrated with his muscle and soft tissue.(Fig.4)

To the best of our knowledge, this is the first case of such pathogenesis and severity described in Taiwan. We present this case to highlight the importance of early diagnosis and timely surgical intervention for necrotizing fasciitis in injection drug users; also revealed a singular microbial result identified from the necrotizing soft tissue infection.

Reference

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Fig. 1 Drug injection site over right upper arm



Fig. 3 Necrotizing fasciitis progressed from right upper arm to axilla, lateral chest wall and abdominal wall



Fig. 2 Chest CT, showed diffuse soft tissue emphysema over right axilla and chest wall



Fig. 4 The blackish purulent discharge over chest wall wound revealed the character of the black-pigmented anaerobes infection