Case Report

**Erysipelothrix rhusiopathiae** Bacteremia with Rare Manifestation of Diffused Cutaneous Skin Lesions

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**ABSTRACT**

Systemic manifestations, especially the diffused cutaneous form, of *Erysipelothrix rhusiopathiae* infection in human are uncommonly seen nowadays. We report here a patient with nephrotic syndrome who developed *E. rhusiopathiae* bacteremia and typical erysipeloid skin lesions without endocarditis. (*J Infect Dis Antimicrob Agents* 2011;28:59-62.)

**Note:** This case had been presented and discussed in the Interhospital Case Conference on Infectious Diseases (ICCID), 19 August 2010, Bangkok, Thailand.

**CASE REPORT**

A 52-years-old housewife was admitted to Songklanagarind Hospital on June 26th, 2010 with a 2-day history of erythematous rash on both legs which, later, spread to her arms and trunk. The rash was accompanied by mild pain. The following day, she developed low-grade fever. Her past illness was remarkable with nephrotic syndrome that had been diagnosed for 3 months. She was treated with 30 mg of prednisolone per day and she denied recently taking herbal or any over-the-counter drug.

On the admission day, her body temperature was 37.3°C. There were round and varying in size rashes on her trunk and extremities (Figure 1 and 2), the diameter of the lesions were between 5 cm and 15 cm. Some skin lesions had a central clearing zone. Other physical examinations were unremarkable except for mild pitting edema on both legs.

Initial laboratory studies disclosed the following; (1) complete blood count: hemoglobin 9.6 g/dL, hematocrit 26.1 percent, WBC 11,400/mm³ (N 92%, band 4%, L 3%, M1%), platelet 212,000/mm³; (2) urinalysis: protein 3+, glucose 4+, urine protein creatinine ratio 13; (3) Cr 1.6 mg/dL; (4) liver function test: normal; (5) random blood sugar: 513 mg/dL; (6) serum ketone 1+; (7) a chest roentgenogram: no abnormalities. Two sets of hemocultures were performed, then, ceftriaxone was empirically started.
Figure 1. Multiple round erythematous rashes on her back and sizes ranged from 5-15 cm with central clearing zone in some lesions.

Figure 2. An early central clearing zone in a round erythematous skin lesion at Rt forearm.

Figure 3. The skin lesion showed to be faded out from central to periphery at Rt knee.

together with intravenous fluid and insulin infusion.

Two bottles of blood cultures collected upon admission grew gram-positive bacteria which was later identified as *Eryseptilothrix rhusiopathiae*. Kirby-Bauer antibiotic susceptibility test showed that it was susceptible to penicillins, cephalosporins, tetracycline, and carbapenems but it was resistant to aminoglycosides, trimethoprim-sulfamethoxazole, and colistin. The skin lesion showed to be faded out from the central to the periphery (Figure 3) and almost disappeared by the second day of admission. She was completely recovered after 14-day course of ceftriaxone. No evidence of valvular vegetation was found on two-dimensional echocardiogram examination of the heart.

DISCUSSION

*E. rhusiopathiae*, formerly, the only species of the genus *Erysipelothrix*, is a facultative, non-spore forming, non-acid-fast, small gram-positive bacilli. In 1909, Rosenbach reported an isolation of the organism from a patient with localized cutaneous lesions, thus establishing it as a human pathogen. He coined the term “erysipeloid” to avoid confusion with the lesions
of human erysipelas. Long recognized as an important cause of infection in animals, it is also recognized as a serious pathogen in humans.\textsuperscript{1}

After the preliminary identification of the organism as gram-positive rod, the biochemistry test further used to differentiate \textit{E. rhusiopathiae} from \textit{Listeria monocytogenes}, lactobacilli, and corynebacteria is the H\textsubscript{2}S test. \textit{Erysipelothrix}, unlike the other three bacteria, could produce the H\textsubscript{2}S gas.\textsuperscript{2}

\textit{E. rhusiopathiae} and infections caused by this organism are worldwide in distribution, and affect a wide variety of vertebrate and invertebrate species. The major reservoir of \textit{E. rhusiopathiae} is generally believed to be domestic swine, but rodents and birds are also frequently infected. The domestic pig is the most important reservoir of \textit{E. rhusiopathiae}. It is estimated that 30-50 percent of healthy swine harbor the organism in their tonsils and other lymphoid tissues. Carriers can discharge the organism in their faeces, urine, saliva and nasal secretion, creating an important source of infection. The organism can survive for long periods in marine environments. The organism causes no known disease in fish but can grow and persist for long periods of time in the mucoid exterior slime of this animal.\textsuperscript{1} The slime on fish appears to be an important source of infection for man. The organism has been isolated from the environment but this may be secondary in importance to animal reservoirs as a source of \textit{E. rhusiopathiae}.\textsuperscript{3}

Individuals involved in occupations or recreations with contact with animals, animal products or animal wastes are at greatest risk. Occupation exposures as butchers, abattoir workers, veterinarians, farmers, fishermen, fish-handlers and housewives are the most commonly infected.\textsuperscript{4} We postulated that our patient might have been infected from the market where she frequently buys fishes for cooking. However, she reported no history of trauma during food preparing.

\textit{E. rhusiopathiae} can cause three forms of human disease which closely resemble disease in swine. These are erysipeloid (a localized cutaneous form), a diffuse cutaneous form, and a septic form often associated with endocarditis. This case was the classic case of a rare manifestation of diffuse cutaneous form in erysepirothrix infection. Because a very few cases have been documented, only 1 of 100 cases reported by Klauder\textsuperscript{5} was generalized and none of the 500 cases reported by Nelson\textsuperscript{6} was this form. The clinical course of diffuse cutaneous form was rapidly healed when proper antibiotics were given as from a previous report.\textsuperscript{7} In this case, the multiple cutaneous serpiginous lesions with sharply defined borders and central clearing resolved after 2 days of treatment.

Even though 90 percent of the 49 reported cases of \textit{E. rhusiopathiae} septicemic patients had presumptive or proven evidences of endocarditis.\textsuperscript{2} Bacteremia without endocarditis was not uncommon and, in contrast with the endocarditis form, occurred more in the normal hosts rather than in the immunocompromised patients.\textsuperscript{7}

Studies of antibiotic susceptibility testing of \textit{E. rhusiopathiae}\textsuperscript{8} showed that penicillin and imipenem were the most active agents, followed by piperacillin, cefotaxime, ciprofloxacin, pefloxacin, and clindamycin, respectively. Resistance was observed with erythromycin, tetracycline, and chloramphenicol. An activity was poor or absent with vancomycin, teicoplanin, daptomycin, trimethoprim-sulfamethoxazole, gentamicin, and netilmicin.\textsuperscript{8}

Oral penicillin will resolve a case of erysipeloid within 48 hours, while intravenous penicillin is recommended for more serious form \textit{E. rhusiopathiae} infections. In those individuals allergic to penicillin, cephalosporins have been described as the most appropriate alternative, as clindamycin and erythromycin are only bacteriostatic towards \textit{E. rhusiopathiae}.
References


