ERYSIPELOID - A RARE ZOONOSIS

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Abstract

The erysipeloid is a rare zoonosis, caused by the microorganism Erysipelothrix rhusiopathiae.

We present a case of 45 years old male patient, butcher, who presents in May 2010, in the Infectious Diseases Department of Pneumology Hospital of Oradea, for multiple lesions well-demarcated, bright red-to-purple with a smooth, shiny surface. The patient has primary one single lesion on his fifth left arm finger and was treated in other department with antihistaminic drugs with no positive results. After that, the affected area grows with apparition of other lesions, associated with the apparition of the pain, fever, joint aches, cough, headache and lymphadenopathy. The laboratory test revealed just leukocytosis associated with inflammatory syndrome. Diagnosis was Erysipeloid - Diffuse cutaneous form, according to the clinical manifestation, lab tests and history. One cure of ceftriaxone and ciprofloxacin was prescribed. The lesions disappeared after 7 days of treatment.

Keywords: erysipeloid, Rosenbach, zoonosis.

Introduction

Erysipeloid is a rare zoonosis, caused by the microorganism *Erysipelothrix rhusiopathia*, a thin, pleomorphic, nonsporulating, gram-positive rod. First isolated from mice by Robert Koch in 1878 and from swine by Louis Pasteur in 1882, it was established as the etiologic agent of swine erysipelas in 1886 by Löffler and as a human pathogen in 1909 when Rosenbach isolated it from a patient with localized cutaneous lesion, (Mandell et al., 2005).

E. rhusiopathiae has been reported as a commensal or a pathogen in a wide variety of vertebrate and invertebrate species, but the major reservoir is believed to be domestic swine, (Sneath et al., 1951). In soil, it may live long enough to cause infections; for weeks or even for months after initial contamination.

Humans acquire erysipeloid after direct contact between traumatized human skin with infected animals, (Wang et al., 2010).

The disease has a worldwide distribution, especially among farmers, butchers, cooks, homemakers, and anglers.

In animals, the organism causes swine erysipelas and several other diseases in poultry and sheep. The infection is more likely to occur during the summer or early fall.

Erysipeloid may present in humans as one of 3 clinical forms: localized cutaneous form, diffuse cutaneous form and systemic infection, (Mandell et al., 2005; Ghorayeb and Matta-Muallem, 2009).

Localized cutaneous form (the "erysipeloid" of Rosenbach) presents well-defined lesions, slightly elevated, violaceous zone, the peripheral edge of which spreads as the centre fades, associated or not with systemic symptoms such as pain, fever, joint aches. Lymphadenitis and lymphadenopathy can also be present. There are usually occurring on the hand or fingers, however, any exposed area of the body may be affected. The disease is self-limiting and usually resolves in 3–4 weeks without therapy.

Diffuse cutaneous form is described when multiple lesions appear on various parts of the body. The lesions are similar to those of the localized form, but bullous lesions can also occur. Systemic symptoms such as fever and joint pains are more frequent than in the localized form. The clinical course is more protracted and recurrences are common.

Systemic infection is the most severe form of erysipeloid. Skin lesions may not be apparent or will be present such as localized areas of swelling surrounding a necrotic center or as several follicular, erythematous papules. It can be associated with endocarditis, chronic arthritis, cerebral infection, osseous necrosis of the thumb, and intracranial abscess. In the generalized form, patients will present fever, chills, weight loss, and a variety of other symptoms (eg, joint pain, cough, headache), depending on the organ system involved.

Definitive diagnosis of infection with *Erysipelothrix* requires isolation of the organism from a biopsy specimen or blood. Gram stain from the skin scraping, shows gram-positive rods but often is negative because the infection has deep localization. Bacterial culture on special media fortified with serum, at room temperature may reveal the organism.

There are no reliable serologic tests for the diagnosis of infection in humans. PCR has been applied successfully to human samples.

The erysipeloid is possibly under-diagnosed due to the resemblance with other infections and because of the difficulty in isolation and identification of the *E. rhusiopathiae*, (Wang et al.,2010).

The first two forms are self-limiting diseases, but untreated can determinate bacteremia, following by systemic infection, (Haddad et al., 2009).

Penicillin is the drug of chose for the treatment of *Erysipelothrix rhusiopathiae* infection. Most strains are highly susceptible to penicillins, cephalosporins, clindamycin, imipenem, and ciprofloxacin, (Takahashi et al., 1984; Venditti et al., 1990, Fidalgo et al., 2002), and resistant at vancomycin **(**Ralph et al., 2004).

Material and methods

A retrospective study was made using the information from the news medical manuscripts and the clinical observation paper of the patient, a case of 45 years old male patient who presents in May 2010, in the Infectious Diseases Department of Pneumology Hospital of Oradea.

Results

We present a case of 45 years old male patient, butcher, who presents for multiple painfully lesions well-demarcated, bright red-to-purple with a smooth, shiny surface.

He was from rural area, didn't have any pets at home and did not travel in other foreign countries ever. The patient does not recall any insect, animal, human bites or trauma to the areas affected.

The patient has primary one single lesion on his fifth left arm finger (Fig. 1) which appeared with 2 weeks before and was treated in other department with antihistaminic drugs with no positive results.

After that, the primary plaque spread centrifugally, an erosive lesion appears in the same area. Other widespread erythematous–oedematous lesions were observed:

- on the right thigh (associated with bulls), (Fig. 2)
- on the right arm (associated with lymphagitis streaking), (Fig.3)
- on the left forearm (annular plaque), (Fig. 4)
- on posterior thorax (two plaques), (Fig. 5,6,7).

Fever (38^0C), joint aches, cough, headache and lymphadenopathy were presented by the patient.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig.5

Fig. 6

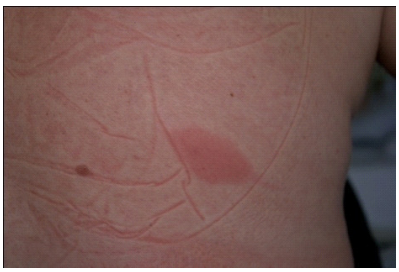

Fig. 7

The laboratory test revealed leukocytosis (White Blood Cells – WBC = 13400 elements /mm^3), with neutrophilia (9100/µL, 90%) associated with increase inflammatory markers (C - reactive protein = ++++, erythrocyte sedimentation rate ESR=35 mm/hr and serum fibrinogen = 680 mg %).

Results of Giemsa and Gram stains were negative, and there was no growth from swabs cultured on blood agar. The patient refused skin biopsy. Serology tests: anti–TES-Ag IgE(anti-Toxocara excretory-secretory antigen), anti Brucella IgG and IgM were negative. Chest's radiography and echocardiography were normal.

Diagnosis was Erysipeloid - Diffuse cutaneous form based on the patient's occupation, typical inflammatory lesions, and mild laboratory abnormalities.

One cure of ceftriaxone (2 gm IV q12h) with ciprofloxacin (500 mg po bid) both 7 days was prescribed. The lesions disappeared after 7 days of treatment.

The patient was left at home under clinical observation.

Discussion

Erysipeloid was much more common in the past, but was always considered an uncommon disease. The incidence of the disease in humans has declined even further in recent years because of technological advances in animal industries, (Veraldi et al., 2009).

Erysipeloid is an occupational disease, (Ghorayeb and Matta-Muallem, 2009). Our patient was butcher for more than 2 years. The contamination of the environment in which the patient was working was probably the cause that leaded to the appearances of the zoonosis.

The infection is more likely to occur during the summer or early fall, (Ghorayeb and Matta-Muallem, 2009), but in this case the spring period was involved, maybe because the weather modifications acted as the main factor that permitted the development of the bacteria.

Diffuse cutaneous form is rare type of erysipeloid, (Mandell et al., 2005).

From the types of the lesions, just some cases of "annular" erysipeloid have also been described until now, (Veraldi et al., 2009). In our case the patient present at the right forearm an annular plaque.

Gram stain may be performed on a skin scraping, which may show gram-positive rods; however, the stain often is negative because the infection is deep, and the microorganism is not reached with scraping, (Ghorayeb and Matta-Muallem, 2009). Giemsa and Gram stains were negative in our case.

Blood cultures are typical negative in diffuse cutaneous form of erysipeloid, (Mandell et al., 2005).

The rapid remission after the cure of antibiotic, associated with the clinical feature and mild laboratory modification sustained the diagnosis, in this case.

Future measures of prevention such as: cleaning the environment, handling precautious the animals and animal's products, avoiding direct contact between the animals or their products with scratches or pricks of the skin regularly must be done.

Conclusions

1. Erysipeloid is an uncommon condition.
2. The diffuse cutaneous form is a rare form of erysipeloid.
3. Just some cases of "annular "erysipeloid have also been described until now.
4. The contamination of the environment in which the patient works was probably implicated in the appearances of the zoonosis.
5. The spring was the period of apparition of the disease, because of the weather modification in this geographic area.
6. Future measures of prevention must be taken to stop the reinfestation.

References

1. Fidalgo S., C. Longbottom, T. Riley, 2002, Susceptibility of *Erysipelothrix rhusiopathiae* to antimicrobial agents and home disinfectants, Pathology.,34, 462–465.
2. Ghorayeb Z., M. Matta-Muallem, 2009, Erysipeloid, http://emedicine.medscape.com.
3. Haddad V., O. Lupi, J. Lonza, S. Tyring, 2009, Tropical dermatology: marine and aquatic dermatology, J Am Acad Dermatol, 61(5), 733-750.
4. Mandell G., J. Douglas, R. Bennett, 2005, Principles and Practice of Infectious Diseases, Elsevier Churchill Livingstone, 6th Edition, Section F-207, 2497-2498.
5. Sneath P., J. Abott, A. Cunliffe, 1951, The bacteriology of erysipeloid. Br Med J., 2, 1063–1066.
6. Ralph D., J. Cherry, G. Demmler, S. Kaplan, 2004, Textbook of Pediatric Infectious Diseases, Saunders, Vol.1, Part III, Section XVI, Subsection 3, 1329.
7. Takahashi T., T. Sawada, K. Ohmae, 1984, Antibiotic resistance of *Erysipelothrix rhusiopathiae* isolated from pigs with chronic swine erysipelas, Antimicrob Agents Chemother, 25, 385–386.
8. Venditti M., V. Gelfusa, A. Tarasi, 1990, Antimicrobial susceptibilities of *Erysipelothrix rhusiopathia,* Antimicrob Agents Chemother, 34, 2038–2040.
9. Veraldi S., V. Girgenti , F. Dassoni, R. Gianotti, 2009, Erysipeloid: a review, Clinical and Experimental Dermatology, 34(8):859-62.
10. Wang Q., B. Chang, T. Riley, 2010, Erysipelothrix rhusiopathiae, Vet Microbiol., 140(3-4), 405-417.