A 32-Year-Old Male with an Ulcer with Necrotic Crusts on the Right Arm

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PHOTO-QUIZ

A thirty-two year old male farmer was hospitalized with the complaint of a wound on the right arm and high fever lasting for seven days. His complaints started 10 days after he had direct contact with meat from a diseased animal. The patient had a fever of 39–40°C. On physical examination, the right elbow extension region was 11x7 cm in diameter and had an ulcer base, presenting with sharp and irregular edges and containing necrotic crusts. The right arm extension and right wrist flexion regions had smaller diameters and similar ulcers (Figure 1). Painless lymphadenopathy 1.5x2 cm in size was detected in the right axillary region with deep palpation. Routine laboratory analysis indicated leucocytosis (16000/mm³), elevated CRP levels (20 mg/dl) and a sedimentation rate of 17 mm/hr.

Samples taken from the skin lesions were sent to the diagnostic laboratory for Gram staining and culture. The microscopic examination of Gram-stained smears showed Gram-positive, endosporeforming rods tending to form chains. (Figure 2). When specimens were planted on 5% sheep-blood agar, greyish-white, tenacious, nonhemolytic and, filamentous colonies were observed. These observations indicated cutaneous anthrax disease. Therefore, ampicillin/sulbactam 6g/day therapy was started. With this medication, the patient quickly remained free of symptoms and signs. Three months later, his skin lesions showed marked regression and healed with scar formation (Figure 3). What is the most probable diagnosis? (see page 140)
ANSWER to PHOTO-QUIZ

Extensive cutaneous anthrax

Anthrax is a zoonotic acute infectious disease caused by the Gram-positive, spore-forming bacterium Bacillus anthracis. It is rarely seen in industrial nations but, common in Turkey. Human cases of anthrax are usually agricultural in origin. Anthrax can occur in three types of infection, including cutaneous, inhalational and gastrointestinal forms. Cutaneous anthrax is the most common form of the disease (95% of all cases). The disease develops when inoculation of bacterial endospores enter the body through a cut or abrasion in the skin. People dealing with animal husbandry, butchers and veterinarians are in the high risk group for the development of anthrax.

Anthrax toxins are composed of protective antigen (PA), lethal factor (LF) and edema factor (OEF). None of these exotoxins (PA, LF, TQ) have a toxic effect alone. They play an important role in the pathogenesis of the disease because of their synergistic effects. The synergistic effects of toxins cause apparent edema and tissue necrosis. After the anthrax bacilli are phagocyted by macrophages in the regional lymph nodes, they enter the circulation and cause severe clinical pictures of anthrax, including meningitis, pneumonia and sepsis.

Cutaneous anthrax generally occurs on exposed areas of the body (e.g., neck, arms, face, legs). A papule develops 1-7 days after the entry of the anthrax bacilli into the skin by cutting, burning or itching. 1-2 days later small vesicles appear around the papule. The enlarging vesicles turn into a hemorrhagic bullae and induration, edema, necrosis, and satellite vesicles develop around the hemorrhagic bullae. Eventually, a characteristic painless, black crust forms. After 1-2 weeks, the lesion dries, and shortly thereafter heals, leaving a permanent scar.

CA can be diagnosed by Gram staining or culture. On %5 sheep-blood agar, greyish-white, tenacious, nonhaemolytic and filamentous colonies are observed. Advanced techniques for diagnosis include serology and PCR. The disease is common in the regions where the risk of contamination with diseased animals or their products is high. Our patient also developed black necrotic tissue and extensive edema after he had direct contact with the diseased animal. CA was also prevalent in the region where our patient lived.

Penicillin is the first choice in the treatment of cutaneous anthrax. The duration of treatment varies from three to 10 days according to clinical response. Alternative drugs for an antibiotic therapy of CA include aminoglycosides, macrolides, quinolones, tetracyclines, cloramphenicol, rifampin, vancomycin, imipenem, meropenem and clindamycin. The vaccine may only be recommended for those at high risk for exposure.

As a result, cutaneous anthrax is often selflimiting and remains localized. But untreated CA or the conditions of immunosuppression or immune deficiency can result in extensive CA, accompanied by LAPs and then, clinical presentation of a severe systemic disease. Therefore, when cutaneous anthrax disease is strongly suspected, the patient must promptly be treated with appropriate antibiotics. In addition, people dealing with animal husbandry, butchers and veterinarians should be educated about CA and its methods of transmission in regions where CA is prevalent. The vaccination of these people and of farm animals may also lead to an apparent decrease in the incidence of cutaneous anthrax.

REFERENCES


