

Türkiye'nin Doğusunda Deri Şarbonu Aile Salgını

Familial Outbreak of Cutaneous Anthrax In Eastern Turkey

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Özet

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Şarbon tüm dünyada görülebilir. Bu infeksiyon gelişmekte olan ülkelerde endemik bir zoonozdur. Bu yazıda inek kesimine katılan hayvancılıkla uğraşan ve çiftçi olan aynı aileden üç hasta paylaşıldı. Tüm olgular hafif formda deri şarbonu idi. Hastalar antibiyotik ile tedavi edildi. Şarbon Doğu Anadolu için hala büyük bir sağlık problemidir. Erken tanı ve tedavi ile olumlu sonuçlar alınır. Hayvan temas hikâyesi olan hastalarda birlikte veziküler, ağrısız, ödemli lezyonları varsa şarbon göz önünde bulundurulmalıdır. Bu çalışmanın amacı Türkiye'nin Doğu kısmında Erzurum'da deri şarbonu salgınına incelemektir.

Anahtar Kelimeler: şarbon, salgın, zoonoz

Abstract

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Anthrax can be seen all over the world. This infection is an endemic zoonosis in developing countries. Three patients from the same family who participated in a cow slaughter were farmer and dealing with animal husbandry. All cases were mild form of cutaneous anthrax. The patients were treated with antibiotics. Anthrax is still a major health problem in Eastern Anatolia. That's why early diagnosis and treatment is important for satisfactory results. For the patients who have animal contact history with vesicular, painless and edematous lesions anthrax should be concerned. The aim of this study was to investigate an epidemic of cutaneous anthrax in Erzurum in eastern part of Turkey.

Keywords: anthrax, outbreak, zoonosis

Introduction

Anthrax, caused by *Bacillus anthracis* is observed frequently in developing countries. In developed countries animal anthrax may be seen but human anthrax is rarely seen. Anthrax is an disease in Turkey. Anthrax is primarily a disease of herbivores. Humans become infected through contact with infected animals or animal products. There are three clinical forms of anthrax; cutaneous anthrax, respiratory system anthrax and gastrointestinal anthrax. The most frequent anthrax is cutaneous anthrax. The incubation period of this form ranges from 1 to 9 days¹⁻³. If there is animal contact history in those who have painless edema vesicular lesions, anthrax must be concerned firstly. In this study, we investigated an epidemic of three cutaneous anthrax cases in Eastern Turkey.

Case 1

A 37-year-old woman presented with rash and itching on the fingers of her left hand. Anamnesis revealed that she had helped slaughter a farm animal a week previously. Three days later, papules appeared on her right ring finger and left little and ring fingers. Two days later the wound turned black and gradually began swelling. A hemorrhagic wound developed. Edema developed on the back of her left hand (Figure 1). No significant characteristics were determined in her own or family history or at physical examination. Body temperature was 36.5 °C, pulse 82 beats/min and arterial blood pressure (TA) 110/70 mm/hg. The patient was admitted to the infectious diseases clinic. White blood cell (WBC) count was 9400 mm³ (neutrophil 67%), hemoglobin (Hb) 13.4, thrombocyte 325000 mm³, C-reactive protein (CRP) 6.2 mg/l and erythrocyte sedimentation rate (ESR) 10 mm/h. Laboratory measurements were aspartate transaminase (AST) 39U/l, alanine aminotransferase (ALT) 17U/l and lactate dehydrogenase (LDH) 213U/l. The patient was diagnosed with cutaneous anthrax and treated empirically with two doses of intravenous procaine penicillin. Since her family doctor had prescribed antibiotics, culturing was not detected in direct observation and culture. Treatment was completed in 10 days. The lesion healed, and the patient was discharged in a healthy condition.

Case 2

A 40-year-old male was admitted to the infectious diseases ward with a 2x1 cm necrotic ulcer and edema on his left little

finger (Figure 2). This case had also been in contact with animals. The patient was the husband of Case 1 and worked in animal husbandry. His body temperature was 36 °C and pulse 78 beats/min. TA was 110/70 mm/hg. At laboratory examination, WBC was 8600, hemoglobin 15, platelet 233000, sedimentation 20 mm/h, CRP 4 mg/l, AST 20U/l, ALT 10 U/l and LDH 259U/l. The patient was hospitalized with a diagnosis of cutaneous anthrax and treated empirically with intravenous procaine penicillin 800000U (2x1). Since the family doctor had prescribed antibiotics, culture of the vesicular lesion material identified no pathogen and blood culture revealed no bacterial growth. The lesions receded and healed. The patient was discharged in a satisfactory clinical condition.



Figure 1:
Erythematous and
mid-necrotic crusted
lesion on left little and
ring fingers and right
finger



Figure 2:
Erythematous,
mid-necrotic lesion with
edema on the left back
hand

Case 3

A 65-year-old woman presented to the clinic with a finger wound. She was the mother of the patient in Case 2. She had also participated in the farm animal slaughter, during which she had cut her finger. Three days later, macules and papules developed on her left little finger, ring finger, fore finger and thumb (Figure 3,4). The lesion had subsequently turned black. A rash and inflammation were observed around the wound. She was admitted to the infectious diseases ward. Physical examination revealed edema, rash and necrotic ulceration on the surface of the extensor of the third finger on the right hand. There were no other pathological findings. At laboratory examination WBC was 12300 (80% neutrophil), Hb 14.9, thrombocyte 365000/mm³ and sedimentation 14/h. Biochemical values were AST 11U/l, ALT 19U/C, LDH 302U/l and CRP 16.8 mg/l. Anti-HCV was positive at ELISA. HCV RNA was negative. Skin anthrax was diagnosed, and penicillin (2x800000U) was started. Two days later, this was changed to ciprofloxacin, which was completed after seven days. She was treated and discharged.



Figure 3,4:
Erythematous, midnecrotic lesion with edema on the left hand 1st, 2nd, 4th, 5th fingers

Discussion:

Anthrax, caused by gram-positive *Bacillus anthracis* spores, is an infectious disease 1-5. It is distinguished from other bacteria in the same group by aerobic and facultative anaerobic growth. It is colonized in alkaline and moist soil. The disease can be observed in herbivorous animals (sheep, goats, cows and pigs). Infected animals and their products are the main sources. Spores are found in animal's digestive systems². Anthrax is seen in humans who have been infected by spores¹. The main infection is caused by direct contact with anthrax spores via inhalation. Wool, hair, meat, bones and other contaminated products are also involved in transference. Ninety-five percent of anthrax cases exhibit scars and wounds on the skin². Anthrax is generally observed in people who work with animals and animal products³.

Minor trauma or skin lesions play an important role in anthrax. Our cases were living in a rural area and worked in animal husbandry. The male patient had recently slaughtered a cow, assisted by his wife and mother. Anthrax is still endemic in Eastern and Southeastern Anatolia, although there has been a decrease^{6,7}. There may be a limited possibility of epidemic spread of the disease. Lesions are visible in exposed parts of the body, especially the head, neck and upper extremities². Lesions were observed on the hands and arms in all our cases. Incubation periods vary between one and 12 days. All our cases were diagnosed based on clinical suspicion. Transmission takes 3-7 days via the skin, 1-6 days via the respiratory system and 1-7 days by mouth. There is a direct correlation with spore numbers. Inhalation infection can occur in 45 days⁸.

Skin lesions start with a typical pruritic papule². This grows and turns into a vesicle, assuming a necrotic shape in the central part. Satellite vesicles can also form. This is surrounded by hyperemic edema. Anthrax lesions go through papular, vesicular and pustular stages. Finally an ulcer forms with a blackened necrotic eschar surrounded by a characteristic are containing brawny edema. Small vesicles surrounding the original lesion form dry eschars⁷. A black eschar appears, and a painful shelled lesion resolves in 1-2 weeks without leaving any scar^{1,2,7}. Similar lesions were observed in all our three cases. Lesions form in 2-3 days, often following animal slaughter.

Carbuncles, erysipelas, cellulitis, necrotizing cellulitis, primary syphilis chancre, orf, cutaneous leishmaniasis, glanders, tularemia, plaque, and typhus and heparin necrosis should be considered in the differential diagnosis of cutaneous anthrax. Anthrax may particularly be confused with staphylococcus and smallpox. Painful lesions should be carefully analyzed, and the possibility of spider bite may also be considered ^{2,3}. Earlier mortality associated with skin anthrax was 10-40%. More recently, early diagnosis and appropriate treatment have resulted in 100% cure rates. Most cases heal without complication or sequelae ¹. For diagnosis, direct smear is prepared from human tissue lesions and bacillus culturing or PCR are performed ^{1,2}.

Parental penicillin is the first antibiotic of choice ^{3,7}. Penicillin, doxycycline, and quinolones are the primary treatment modalities for anthrax. The bacterium is resistant to wide-spectrum cephalosporin and trimethoprim-sulfamethoxazole. Penicillin G, doxycycline, vancomycin, ciprofloxacin, procaine penicillin, oral amoxicillin or penicillin V are used for 3-7 days in the treatment of classic cutaneous anthrax ¹⁻³. No exact duration of treatment has been determined. In recent years, some studies have shown that short-term and standard treatment

is effective in uncomplicated cases ⁹. Antibiotic treatment in cutaneous anthrax can sterilize the lesion in the first 24 hours, but cannot prevent scar formation. For CDC, bioterrorism-related inhalation and gastrointestinal anthrax, the suggested treatment is ciprofloxacin or doxycycline in addition to antibiotics for 60 days ¹⁰. Since the family doctor had prescribed antibiotics in our cases, no bacterial growth was determined in blood culture. No micro-organism appeared at direct observation. Treatment lasted 7 days. Corticosteroid can be added to treatment in patients with widespread edema, meningitis and serious respiratory problems ^{2,9}.

Conclusion

Anthrax is an endemic and sometimes epidemic infectious disease in countries in which ranching is widespread. It is not observed in developing countries other than as a potential biological weapon. Vaccinations of animals, educational activities and efforts to control its causes have all led to a decrease in the disease. Anthrax should be the first disease considered in patients who have contact with animals. Epidemic spread can be prevented with early diagnosis and treatment. This report is intended as a guide for clinicians.

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