Cutaneous anthrax in an unusual location: case report

Antrace cutaneo con localizzazione insolita: un caso clinico

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INTRODUCTION

Anthrax is a zoonotic disease caused by Bacillus anthracis, an anaerobic, non-motile, Gram-positive bacillus with central spores [1]. Cattle, horses, sheep, goats and swine are the most commonly affected animals. The disease is transmitted to humans from the infected animals by direct contact with animal products through defective skin areas, or rarely by insects [2-4]. It is a very rare disease in Europe and the United States [1-3]. On the other hand, in our country (Turkey) it is seen where stock breeding is common, especially in eastern regions [3, 5-7]. Anthrax is manifest in three primary forms: cutaneous, respiratory and gastrointestinal [6]. Recently, another type of anthrax (injectional anthrax) has been identified among heroin-injecting drug users in Europe [8]. Cutaneous anthrax is the most common form (approximately 95% of all cases), and the majority of cases are seen on hands and faces where exposure is more likely [1-6, 9]. Cutaneous anthrax is a fatal disease (20% to 30%) if not treated appropriately. However, with antibiotic therapy mortality has decreased to less than 1% [9]. Surgery should be postponed until the microorganism is completely eradicated [10].

We present here an unusual case of cutaneous anthrax of the lumbar region with a wide skin defect.

CASE REPORT

A 50-year-old male patient was referred to our clinic with a black eschar on his lumbar region. The patient described a small erythematous painless papule on the lumbar region that started seven days prior with a gradual increase of symptoms. The use of antibiotics (amoxicillin clavulanate 3 g/day over three days) was reported. There was no prior history of trauma. The patient’s history indicated that he was associated with livestock, living in an area endemic for anthrax and he was not a drug user.

Physical examination revealed a body temperature of 36.8°C, arterial blood pressure of 110/70 mm/Hg and a pulse rate of 78 beats/min. The patient had a wound on the left lumbar region (wide, irregular, black eschar and oedema on the erythematous ground). The lesion extended to the dorsal region with hypoaemia and oedema (Figure 1). Other systems examination was normal. Laboratory examinations showed the leukocyte count was 9,800 mm3, C-reactive protein concentration was 5.8 mg/dL (normal: 0-0.8 mg/dL) and an erythrocyte sedimentation rate of 23 mm/h. Other laboratory results were normal. The patient was hospitalized.
Tissue and blood samples were taken for culture. There was no bacterial growth in the blood and tissue culture of the patient. Short chains of large Gram-positive rods, erythrocytes and polymorphonuclear leukocytes were observed on the Gram-stained smears prepared from the lesion, and encapsulated Gram-positive rods were seen upon pathological examination of the excised necrotic lesion.

The patient had been diagnosed with anthrax based on the characteristic eschar lesions and the absence of fever and pain along with a history of contact with animals or animal products and isolation of Gram-positive bacilli from the edge of the eschar.

After isolation of the Gram-positive bacilli from the skin lesions, prompt antibiotic treatment (intravenous sulbactam-ampicillin 1.5 g every six hours) was initiated. Because of a suspicion of secondary infection with other bacteria, sulbactam-ampicillin was preferable to penicillin. The lesion began to heal after the fourth day of treatment (Figure 2).

Following eradication of the bacilli (after 14 days of antibiotic treatment), reconstruction was planned. A split-thickness skin graft was applied. The lesion healed within 21 days leaving very little skin atrophy after surgery and antimicrobial therapy.

## DISCUSSION

A diagnosis of anthrax depends on clinical suspicion. The clinical presentation of cutaneous anthrax is so characteristic that the diagnosis is usually not missed.

The infection initially presents itself as a pruritic papule that resembles an insect bite. In one or two days, this papule enlarges and develops into an ulcer surrounded by vesicles. A characteristic black necrotic central eschar develops later (due to the bacterial toxin) with associated oedema. Lesions are relatively painless if secondary infection is not superimposed [11].

Along with these, a history of exposure to animals or animal products usually confirms the diagnosis. Analysis of the vesicular fluid usually reveals *B. anthracis* organisms, easily seen on Gram staining. In these cases, the diagnosis is made with the clinical appearance of the lesions, the patient's history and detection of Gram-positive bacilli with microbiological evaluation [1, 12].

In previous studies, diagnosis of anthrax were based on the patient's history, clinical findings and a Gram staining showing Gram-positive ba-
cilli from the lesion in a patient whose cultures gave no growth [6, 7, 10]. Sometimes, microbiological methods like culture and Gram staining of B. anthracis do not hold well for patients who have already taken antibiotics before the sample [13]. Immunofluorescence has also been used for direct identification of B. anthracis spores [13]. Patients usually present with lesions on exposed skin areas; the most common lesion site is the hand and fingers (41.3%) followed by the face and neck [6, 7, 14]. In our case, the lesion was found in the lumbar region.

Cutaneous anthrax found in unusual locations was reported in the literature but not in this region of the human body [15-18]. Death is often caused by septicaemia when antibacterial treatment for cutaneous anthrax is inadequate [12]. Thus, the early diagnosis and treatment of anthrax is critical. Surgical intervention is not recommended during the acute phase as it may lead to septicaemia and worsening of the infection [1, 12, 19].

Following eradication of the bacilli, surgery is also beneficial in cases with extensive skin necrosis, which may preclude the chance of obtaining a sufficient full-thickness skin graft easily. The deformity created by the infection can easily be reconstructed by a superficial escharotomy and split-thickness skin grafting [20].

In conclusion, cutaneous anthrax should be considered in any patient with a painless ulcer with vesicles, oedema and a history of exposure to animals or animal products who lives in an endemic area.

The diagnosis of cutaneous anthrax may be difficult, especially in atypical presentations and non-endemic areas. Thus, cutaneous anthrax should be kept in mind as early diagnosis and antibiotic and surgical treatment can facilitate treatment and prevent the development of complications.

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**SUMMARY**

Cutaneous anthrax is well known, unlike anthrax of the lumbar region, which is not reported elsewhere. We present a case of anthrax of the lumbar region in a 50-year-old man. The infection was characterised by a wide, black eschar and oedema on an erythematous ground. After isolation of the Gram-positive bacilli from the skin lesions, prompt antibiotic treatment (intravenous sulbactam-ampicillin 1.5 g every six hours) was initiated. Following eradication of the bacilli after 14 days of antibiotic treatment, a split-thickness skin graft was applied. A diagnosis of anthrax depends on clinical suspicion. Early diagnosis, antibiotic and surgical treatment can facilitate the treatment and prevent development of complications.

**RIASSUNTO**

L’antrace cutaneo è una patologia ben nota ma una sua localizzazione a livello lombare non è mai stata riportata. In questo articolo presentiamo un caso di antrace localizzato nella regione lombare in un uomo di 50 anni. L’infezione era caratterizzata da un’estesa escara nera ed edema su base eritematosa. Dopo isolamento di bacilli Gram-positivi dalle lesioni cutanee, è stata istituita tempestivamente terapia antibiotica (ampicillina/sulbactam 1,5 g ogni 6 ore). In seguito all’eradicazione batteriologica (dopo 14 giorni di trattamento), è stato applicato un innesto cutaneo. La diagnosi di antrace si fonda sul sospetto clinico e una diagnosi tempestiva, il trattamento antibiotico e quello chirurgico possono facilitarne il trattamento e prevenire l’insorgenza di complicanze.
REFERENCES


