

## CASE REPORT: CUTANEOUS ANTHRAX

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### ABSTRACT

Anthrax is a potentially fatal zoonotic disease caused by the gram-positive organism, *Bacillus Anthracis*. In this report, the patient was a 40-year-old female who worked in a cattle farm. The patient developed black ulcer on her right hand with swelling and pruritus. The lesion started discharging pus, gradually hardened and turned black (Eschar). The patient had no other symptoms and had no significant medical or surgical history. She came to the General Medicine Department of our hospital with these complaints of swelling and erythema on 4<sup>th</sup> digit of left hands respectively, for a week duration. She was treated with doxycycline 100mg IV for 3 days which was then changed to oral form for one week.

**KEYWORDS:** *Bacillus Anthracis*, Eschar.

### INTRODUCTION

Anthrax is a potentially fatal zoonotic disease caused by the gram-positive organism, *Bacillus anthracis*, which rarely affects humans under normal conditions.<sup>[1]</sup> The cutaneous form accounts for more than 90% of all human cases of anthrax worldwide.<sup>[2]</sup> Although anthrax is primarily an animal disease, humans can acquire anthrax by exposure to infected animals, animal products, or spores in the soil. As soon as the anthrax spores enter the skin, usually through a sore, person develops cutaneous anthrax. Cutaneous anthrax in humans commonly results from direct contact with anthrax infected animals or its products such as wool, meat etc.. and is generally an occupational hazard. The head, forearms and hands are the most common sites of infection. Even though the lesions are not painful, pain may result from oedema or secondary infection. Cutaneous Anthrax is considered to be the least dangerous form of anthrax. Infection usually develops from 1 to 7 days after exposure. In most of the developed nations, anthrax has almost disappeared the disease is still endemic in many of the developing countries. With early diagnosis and appropriate antibiotic therapy the mortality rate is usually below 1%, but if it is left untreated, the fatality rate can even reach upto 20%. It typically begins as painless, itchy, and erythematous papules, and then, turns into vesicles, which eventually forms a black lesion. Unless a secondary infection is present this disease is often painless. It has been previously demonstrated that ulcers become culture-negative a few hours following intravenous penicillin injection.<sup>[4]</sup>

### CASE REPORT

In this report, the patient was a 40-year-old female who worked in a cattle farm. The patient developed black ulcer on her left hand with swelling and pruritus. The lesion started discharging pus, gradually hardened and turned black (Eschar). No other symptom was reported by the patient and he had no significant medical or surgical history. She came to the General Medicine Department of our hospital with these complaints of swelling and erythema on 4<sup>th</sup> digit of left hand for a week duration. She was treated with doxycycline 100mg IV for 3 days which was then changed to oral form for one week.



**Fig: Cutaneous Lesion on Hand.**

## DISCUSSION

Cutaneous disease is characterized by one or more itchy, painless papules or vesicles over the skin, generally on exposed areas such as the face, neck, forearms, or hands. The papule lesion forms a skin ulcer within 7–10 days of the initial lesion. The ulcer later crusts over, forming a painless black eschar. In addition to this, painful swollen regional lymph nodes, localized swelling, and systemic symptoms can occur. A painless papule develops at the site of contact surrounded by erythema and edema after incubation period of 2–5 days. The lesion evolves into a vesicle and fluid becomes black due to haemorrhage. Further it ulcerates and develops to an eschar. Localized or generalized lymphadenopathy and constitutional symptoms may occur.<sup>[5]</sup>

The untreated case fatality rate is 5–20%; death is rare with appropriate therapy.<sup>[6]</sup> In the developed nations, anthrax has all disappeared, however in India which has got the largest population of livestock in the world, the disease is still endemic. 70% of its population is living in villages, majority are dependent on livestock for their livelihood. Moreover a large number of people are working as tanners and leather industries have a chance of getting infected. The most common form of anthrax is Cutaneous – around 90% of the cases worldwide. It is more common in butchers, veterinarians and professionals who come in contact with animals often. Mortality rate is 10–20% if untreated. As per CDC, treatment with Ciprofloxacin or Doxycycline is recommended. Penicillin or Erythromycin can also be used.<sup>[8]</sup>

Anthrax is one of the 11 major zoonotic diseases accorded a priority status in India by the expert group of RZCI (Roadmap to Combat Zoonoses in India) an initiative by Public Health Foundation of India (PHFI). In Murshidabad West Bengal Anthrax outbreak was associated with slaughtering of sick cows in 2007 and numerous cases of Cutaneous Anthrax was reported. A significant number of Cutaneous Anthrax cases have been reported from Vellore and JIPMER, Pondicherry. 5 cases of Cutaneous Anthrax have been reported from Vishakhapatnam, Andhra Pradesh. A study on outbreak of Cutaneous Anthrax in a village of West Bengal also reported use of contact history, staining and culture to identify the organism as in our study.<sup>[8]</sup>

In our case the source of infection was a cow which got infected with Anthrax. The spores might have entered through the skin of the patient and led to the characteristic lesion.

## CONCLUSION

Anthrax causes epidemics and can be devastating for both human and livestock, therefore clinicians and microbiologists must be alert in diagnosing and reporting any such case.

Such outbreaks can be prevented by following some simple precautions.

1. Protective, impermeable clothing and equipment made of rubber with no perforations should be used when handling the body of an anthrax infected animal or person. Skin with wounds or scratches should never be exposed to contaminants.
2. Effectual decontamination of possible anthrax-contaminated sites can be achieved by a thorough wash down with antimicrobial water and soap. Proper treatment of waste water should be done with bleach or other anti-microbial agents. Effective decontamination of articles can be managed by boiling contaminated articles in water for 30 minutes or longer. The bacterial spores can be effectively decontaminated by burning the infected clothing.
3. Cremating victims is the preferred way of body disposal. Delays of only a few days may make the disease untreatable and treatment should be started even without symptoms if possible contamination or exposure is suspected.

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