

Clinical presentations and case definitions of anthrax in heroin users

(from HPS Anthrax in Drug Users: Case Definitions. Version 5.0 Final - 13th January 2010)

Anthrax has only been described once in an injecting drug user (IDU) prior to the present outbreak. Case presentation in this outbreak has varied in terms of the initial signs, symptoms and severity. They have presented, mainly, as injection-related soft tissue infections. Not all cases have presented in this way however, a few have presented after having possibly inhaled or snorted heroin. Hence all possible presentations of anthrax need to be considered in anyone with a history of recent heroin use by any route.

Due to the nature of the infection in heroin users clinicians should consider the following as possible presentations of anthrax and discuss the case immediately with their local microbiologist.

1) Injection Anthrax

Where there is a history of recent injection use of heroin the following should be considered as possible presentations: Any IDU who presents with:

- Severe soft tissue infection, including necrotizing fasciitis and cellulitis/abscess particularly if associated with oedema (often marked)
- Signs of severe sepsis even without evidence of soft tissue infection
- Meningitis (especially haemorrhagic meningitis) Also be suspicious of users of heroin who present clinically and/or with CT evidence suggestive of a subarachnoid haemorrhage/intracranial bleed

2) Inhalation anthrax

Inhalational anthrax is a rarer form of classical presentation for anthrax associated with direct inhalation of spores into the lungs. There is a potential risk of inhaling anthrax spores from snorting or smoking heroin contaminated with anthrax spores. Symptoms may begin with a flu-like illness followed by respiratory difficulties and shock after 2-6 days

The signs and symptoms of inhalational anthrax include:

- Initial flu-like illness, progressing to severe respiratory difficulties and shock
- Chest x-ray signs – pleural effusions, mediastinal widening, paratracheal fullness, hilar fullness, parenchymal infiltrates
- Progressively enlarging, haemorrhagic pleural effusions are a consistent feature
- The disease is often biphasic, with a prodrome of general malaise for 2-3 days, followed by a day or two of apparent remission before the full blown picture develops.
- Respiratory symptoms may also be accompanied by signs and symptoms suggesting meningitis or intracranial bleeding in the rapidly advancing stages of the disease process due to haematogenous spread.

3) Cutaneous (skin) anthrax

There have been no reports to date in this outbreak of classical cutaneous anthrax which is normally the most common form. Such typical skin lesions resulting from injection of spores

remains a possibility, as does such lesions occurring from simply handling the contaminated heroin itself.

In classical cutaneous anthrax, a lesion normally appears on the skin: on the head, neck, forearms or hands. In injecting users it may be nearer to an injection site on a limb or in the groin area. This lesion starts as a small bump and develops into a characteristic ulcer with a black centre. Marked swelling (oedema) associated with the lesion is a classical finding. It is rarely painful, but if untreated the infection can spread to cause blood poisoning. If untreated, the disease can be fatal in 5% of cases, but recovery is possible with prompt antibiotic treatment.

Case Definitions:

Confirmed Case

- A) A drug user with a clinical syndrome compatible with Anthrax* (see clinical presentation) AND one or more of:
- Growth of *Bacillus anthracis* from a clinical isolate confirmed by the reference laboratory
 - Evidence of *Bacillus anthracis* DNA by PCR on multiple target genes
 - Demonstration of *Bacillus anthracis* in a clinical specimen by immunohistochemistry (IHC)
 - Serology with seroconversion on paired specimens
 - Demonstration of specific anthrax toxin in blood

Probable (Suspected) Case

A drug user with a clinical syndrome compatible with Anthrax*

AND

Gram positive bacilli identified or bacterial colony growth (phenotypically resembling *Bacillus anthracis*) from either a tissue specimen/ swab of lesion or fluid/collection or blood culture

Possible Case

A drug user with a clinical syndrome compatible with Anthrax*

Including **symptomatic** individuals with an epidemiological link to a known confirmed or probable case.

(NB individual drug users who give a history of sharing heroin with a known confirmed or probable case but who are not symptomatic themselves should not be classed as “possible” cases, but may be investigated as “contacts”)