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Anthrax

Current anthrax outbreaks in South Africa

Northern Cape Province

During March 2014 there were reports of an unusual increase in deaths among sheep and goats in Sanddrift (Namakwa District), close to the Namibian border. Animal specimens were submitted to Onderstepoort Veterinary Institute for testing, and anthrax was confirmed as the cause of the outbreak. Of concern was that some residents in the area had slaughtered sick animals, and had potentially consumed anthrax-contaminated meat.

The last recorded animal anthrax outbreak in this area was in 2006, and occurred in Kuboes, a small town neighbouring Sanddrift. One human case of probable cutaneous anthrax was identified, and 19 persons exposed to anthrax-contaminated goat and sheep carcasses were given antibiotic prophylaxis and monitored.

Namakwa District Municipality health officials instituted active case finding at public health clinics, and no suspected human cases have been identified to date. Community health education began on 21 March 2014 at schools and within the community, to raise awareness of the disease and highlight preventive measures. The Department of Agriculture, Land Reform and Rural Development has planned an animal anthrax vaccination campaign in response to the outbreak.

Northern Kruger National Park, Limpopo Province

An outbreak of anthrax among wildlife has been reported in the northern Pafuri area of the Kruger National Park. Although this area is known to be endemic for anthrax with wildlife cases reported every year, there was a sudden dramatic increase in the number of anthrax cases during February 2014. Affected wildlife species include impala, kudu, nyala and Burchell's zebra. Since the outbreak is in a remote area of the park, it poses no risk to travellers.

FOCUS ON ANTHRAX

Anthrax is endemic in parts of southern Africa and is commonly reported in livestock and wildlife. In 2013 and 2014, outbreaks have been reported in Namibia (human and animal cases), Zimbabwe (human and animal cases), Lesotho (human and animal cases), and the Kruger National Park, South Africa (animal cases only).

Bacillus anthracis is a spore-forming bacterium that can survive for extended periods in the environment. In anthrax-endemic areas, sporadic animal cases and occasional outbreaks (epizootics) occur, sustaining the persistence of the organism in the environment. Anthrax can be transmitted to humans by direct contact with infected animals or their products (e.g. wool, hides, animal-hair products), by inhalation of aerosolised spores from infected animal products, or by ingestion of undercooked anthrax-contaminated meat. Intentional release of weaponised anthrax spores have also caused cases and outbreaks of disease in humans.

Depending on the mode of transmission, disease usually manifests as one of three forms. Cutaneous anthrax, the most common form accounting for >95% of infections, occurs when the bacterium enters a cut or abrasion on the skin – typically on the hands, arms or face. Disease begins as a small, pruritic papule resembling an insect bite, which within 1-2 days develops a central vesicle which leaves a painless ulcer. The ulcer is characterised by the presence of a black necrotic centre (eschar), and is typically associated with extensive local oedema. Regional lymphadenopathy is often present. With timely diagnosis and appropriate antimicrobial therapy, the case fatality rate (CFR) is <1%; however, in untreated cases the CFR can approach 20%. Inhalational anthrax is usually a biphasic illness. An initial prodrome of influenza-like illness lasting 4-5 days is followed by a rapidly progressive severe respiratory illness and shock. Once the fulminant phase of illness manifests, the CFR is >90% despite appropriate antimicrobial therapy and supportive care. If antimicrobial therapy is initiated during the prodromal stage of disease, there is a greater chance of survival. Chest X-ray findings in inhalational anthrax classically include a widened mediastinum, with or without pleural effusion or pneumonic changes. Gastrointestinal anthrax follows the consumption of undercooked contaminated meat. After an incubation period of 1-6 days, intestinal necrotic ulcers develop. Symptoms include nausea, loss of appetite, vomiting (with blood in some instances), low-grade fever, and occasionally diarrhoea; the CFR ranges from 4-60%. Oropharyngeal infection is rare, and may occur following the consumption of contaminated meat; oropharyngeal necrotic ulcers develop, and disease manifests with oedema of the oropharynx and neck, cervical lymphadenopathy, pharyngitis and fever. Haematogenous spread following cutaneous, gastrointestinal or inhalational anthrax can occur, resulting in anthrax meningitis; the CFR of this severe complication is >90%.

A suspected case of human anthrax requires an immediate telephonic notification to local Department of Health officials. The appropriate laboratory investigations for suspected anthrax depend on the clinical presentation of disease. Vesicular fluid swabbed from previously unopened vesicles, or swabs from under the edge of the eschar, are the preferred specimens for suspected cutaneous anthrax. Other forms require the collection of blood for culture. Sputum or gastric washings may be submitted for suspected inhalational anthrax, and cerebrospinal fluid for suspected anthrax meningitis. Testing of human samples for anthrax is only performed at the Centre for Emerging and Zoonotic Diseases (NICD-NHLS) and employs a range of testing modalities, including microscopy, culture, and PCR. See the NICD-NHLS Quick Reference Guide for the Laboratory Diagnosis of Priority Communicable Diseases for further details.

A high index of clinical suspicion and prompt institution of appropriate antimicrobial therapy (preferably following specimen collection) is essential for the treatment of suspected anthrax disease. Cutaneous anthrax may be treated with oral amoxicillin, ciprofloxacin or doxycycline but should be guided by the results of antimicrobial susceptibility testing where available. A multidrug regimen is indicated for the treatment of systemic anthrax and expert advice should be sought in such cases.

Routine vaccination of livestock is the most effective preventive measure against anthrax in South Africa. Human vaccines are not available in South Africa. Prolonged post-exposure chemoprophylaxis (PEP) is

highly effective and should be started immediately if there is a strong suspicion of inhalation of aerosolised spores in a deliberate release scenario (bioterrorist attack). Screening tests following anthrax exposure are costly and ineffective, and thus are not recommended; however, PEP may be stopped following a negative finding from laboratory investigation of the implicated package/ material. See the NICD-NHLS Healthcare Workers Handbook on Bioterrorism for additional details. PEP is generally not recommended in the event of most natural exposures and the public health response consists of close monitoring for the development of symptoms in persons exposed, and prompt treatment should symptoms develop. Nonetheless, a short course of PEP may be considered in the setting of substantial risk in a natural exposure situation; for example, the consumption of poorly cooked meat from an anthrax-contaminated carcass. Where possible exposures are anticipated but have not yet happened, animal carcasses should be disposed of appropriately (i.e. incinerated, or buried deeply and covered in lime to prevent spore formation). Personal protective equipment should be donned when working with anthrax-contaminated carcasses and contaminated materials. Travellers to areas with current outbreaks should be advised to avoid contact with animals and high-risk animal-products such as hides. Additional information can be found in the WHO Anthrax in Humans and Animals Guideline.

Source: Division of Public Health Surveillance and Response and Centre for Emerging and Zoonotic Diseases, NICD/NHLS; Northern Cape Province Department of Health and Department of Agriculture and Land Reform; Department of Agriculture, Forestry and Fisheries

Source: Centre for Emerging and Zoonotic Diseases and Division of Public Health Surveillance and Response, NICD-NHLS