Epidemiological Alert:
Plague

(Updated as of 25 August 2010)

On Epidemiological Week (EW) 32 of this year, the Ministry of Health and Sports of the Plurinational State of Bolivia registered a confirmed case of bubonic plague in a male of 14-year-old from the municipality of Apolo, department of La Paz who died on 7 August, 2010. To date, not new cases were reported.

The latest outbreak occurred in this municipality was in 1997, in the town of Machua, where four cases were confirmed.

Among the preventive measures taken by the authorities in Bolivia are:

- Active search for contacts and cases in the community.
- Beginning of prophylaxis in contacts and suspects.
- Monitoring the implementation of strict biosecurity measures by the health personnel.
- Strengthening monitoring and research.
- Promotion and prevention measures.

Regarding the plague outbreak in Peru, from the EW 32 until to date, the Ministry of Health registered 27 cases of plague, of which 11 were laboratory confirmed. Of these 27 registered cases, 21 were bubonic plague (including one deceased), 4 pneumonic plague and two died from septicemic plague. 25 of them acquired the infection in the province of Ascope and 2 in Trujillo. The last case of pneumonic plague symptoms began on August 11, 2010 and there were no new cases thereafter.

***Source**: Peru and Bolivia IHR- National Focal Point*

In light of this situation the Pan American Health Organization is submitting the alert on the need for strengthening active surveillance in the zoonotic foci; as well as to prepare and implement a program for environmental management in order to reduce the risk of dissemination from these foci.

Plague (ICD-10 A20)

Plague is a zoonotic disease whose infectious agent is the *Yersinia pestis* bacterium. It affects mainly small animals and their fleas. Humans can also be infected through the bite of an infected flea, the most common form of transmission, although it could also occur through direct contact with an infected person; inhalation; and rarely by ingesting infected material.

Plague can pose a serious threat to public health. The plague case-fatality rate for untreated cases ranges between 30-100%.

The incubation period is from 3 to 7 days. It initially presents itself as influenza-like symptoms: sudden fever, chill, headache, malaise, vomit and nausea. Subsequently, one of the three forms of clinical manifestations of the *Yersinia pestis* infection may be developed, which depend on its route of transmission:

Bubonic plague (ICD-10 A20.0): is the most common form. The bacillus penetrates the skin starting on the bite by the infected flea and travels through the lymphatic system up to the closest node which consequently becomes inflamed due to the replication of the *Y. pestis* in its interior. This causes the bubo, which is very painful and can suppurate in advanced stages of the infection.

Septicemic plague (ICD-10 A20.7): occurs when infection spreads through the bloodstream. Commonly the advanced stages of bubonic plague result in this clinical form.

Pneumonic plague (ICD-10 A20.2): is the most virulent and least common of the clinical forms. It tends to be the secondary dissemination form of an advanced bubonic infection. It can also be the result of the inhalation of infected respiratory droplets and can be directly transmitted from one person to another. Untreated it is always fatal.

Introduction

Plague continues to pose a threat to public health given the persistence of the infective agent in nature. It is a predominantly rural disease, although outbreaks are recorded in urban areas in some countries of Africa, reason for which the risk of urban transmission should not be underestimated.

In the Region of the Americas the countries that have historically recorded cases were Bolivia, Brazil, Ecuador, Peru, and the United States.

A review carried out by the World Health Organization (WHO) on the cases of plague recorded during 2004-2009 demonstrated that during that period 12,503 cases of plague were reported at the global level; including 843 deaths in 16 countries of Africa, Asia, and the Americas. Of these, 1.2% corresponded to the Region of the Americas, with a case-fatality rate of 4.1%. The countries in the Region that recorded cases during that period were Peru and the United States.

Under the International Health Regulations (2005), pneumonic plague is one of the events that should be evaluated using the Annex 2 decision instrument; due to its potentially serious impact on public health and its potential for quick international spread.

Laboratory Diagnosis

The diagnosis and the confirmation of plague require laboratory tests. The confirmation is carried out through the isolation and identification of *Y. pestis* through the culture of samples from the patient. Depending on the type of presentation of the disease, the samples to be analyzed could be the aspirate of the buboes, the blood, or the sputum.

Infection can also be confirmed examining serum samples obtained in the early and late phases of the infection (seroconversion). Rapid tests currently exist for which use in the field has been validated to rapidly detect the presence of antigens of *Y. pestis* in patients. Facing the suspicion of cases of plague, samples should be collected and sent for laboratory testing.

Treatment of patients and infection prevention measures in health facilities

The early detection and treatment are essential in order to reduce complications and case-fatality. The administration of antibiotics and the support treatment lead to the cure of the patient, provided that it is diagnosed on time.

In case of pneumonic plague it is recommended to isolate the patients. The duration of this precaution should be of up to 48 hours after the treatment is begun.

In order to prevent infections in the health facilities, it is encouraged to rigorously carry out the standard precautions, which include: washing hands with soap and water or glycerinated alcohol, and the use of gloves prior to contact with mucous membranes, broken skin, and for contact with excretions or secretions. Cleansing the environment is also recommended, with the use of soap and water.
Aerosol-generating procedures (intubation, cardiopulmonary resuscitation, bronchoscopy, surgery and autopsy) can be related to a greater risk of transmission of the infection. The number of health workers present in these procedures should be limited. All the present health workers should use respirators (N-95) against respiratory particles.

Recommendations

- Implement or strengthen active surveillance in the zoonotic foci and the rapid response designed to reduce the exposure during the epizootic outbreaks.
- Conduct investigation in order to identify the species of fleas and other animals involved in the enzootic cycle of plague in the Region.
- Prepare and implement a program for environmental management in order to reduce the risk of spread in the zoonotic foci.
- When facing the occurrence of cases it is important to identify the most likely source of infection in order to implement the appropriate sanitation and control measures.
- Alert the health workers in the areas with active transmission of plague on the clinical manifestations of the disease and the case definition.

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