

Hantavirus Pulmonary Syndrome (HPS)

2015 Case Definition

Background

Hantaviruses are pathogens carried by, and transmitted to humans, from rodents. Humans can contract hantavirus infection when they come into contact with infected rodents or their urine and droppings.

The clinical syndrome of HPS or hantavirus cardiopulmonary syndrome was first recognized in 1993 and has since been identified throughout the United States. Although rare, Hantavirus Pulmonary Syndrome (HPS) is frequently fatal, with a case fatality rate of 36%.

Patients with hantavirus infection typically present in a nonspecific way with a relatively short febrile prodrome lasting 3-5 days. In addition to fever and myalgias, early symptoms include headache, chills, dizziness, non-productive cough, nausea, vomiting, and other gastrointestinal symptoms. Malaise, diarrhea, and lightheadedness are reported by approximately half of all patients, with less frequent reports of arthralgias, back pain, and abdominal pain. Symptoms of HPS generally do not develop until approximately day seven, when pulmonary symptoms such as cough and tachypnea commence. Patients may report shortness of breath. Once the cardiopulmonary phase begins, however, the disease progresses rapidly, necessitating hospitalization and often ventilation within 24 hours. In a small proportion of patients with hantavirus infection, cardio-pulmonary symptoms do not develop. These patients would be considered to have Hantavirus infection, non-HPS.

Clinical Description

Hantavirus Pulmonary Syndrome (HPS) is an acute febrile illness (i.e., temperature greater than 101.0 F [greater than 38.3 C]) with a prodrome consisting of fever, chills, myalgia, headache, and gastrointestinal symptoms, and one or more of the following clinical features: Bilateral diffuse interstitial edema, or

- Clinical diagnosis of acute respiratory distress syndrome (ARDS), or
- Radiographic evidence of noncardiogenic pulmonary edema, or
- An unexplained respiratory illness resulting in death, and includes an autopsy examination demonstrating noncardiogenic pulmonary edema without an identifiable cause, or
- Healthcare record with a diagnosis of hantavirus pulmonary syndrome, or
- Death certificate lists hantavirus pulmonary syndrome as a cause of death or a significant condition contributing to death

Laboratory Criteria for Diagnosis

- Detection of hantavirus-specific immunoglobulin M or rising titers of hantavirus-specific immunoglobulin G, or
- Detection of hantavirus-specific ribonucleic acid in clinical specimens, or
- Detection of hantavirus antigen by immunohistochemistry in lung biopsy or autopsy tissues

Case Classification

Confirmed

A clinically compatible case of HPS with laboratory evidence.

Comments

Laboratory testing should be performed or confirmed at a reference laboratory. Because the clinical illness is nonspecific and ARDS is common, a screening case definition can be used to determine which patients to test. In general, a predisposing medical condition (e.g., chronic pulmonary disease, malignancy, trauma, burn, and surgery) is a more likely cause of ARDS than HPS, and patients who have these underlying conditions and ARDS need not be tested for hantavirus.