

HANTAVIRUS PULMONARY SYNDROME

G.E. Margareat Thatcher*

Asst. Professor, Sree Balaji College of Nursing, BIHER.Chrompet-44.

***Corresponding Author: G.E. Margareat Thatcher**

Asst. Professor, Sree Balaji College of Nursing, BIHER.Chrompet-44.

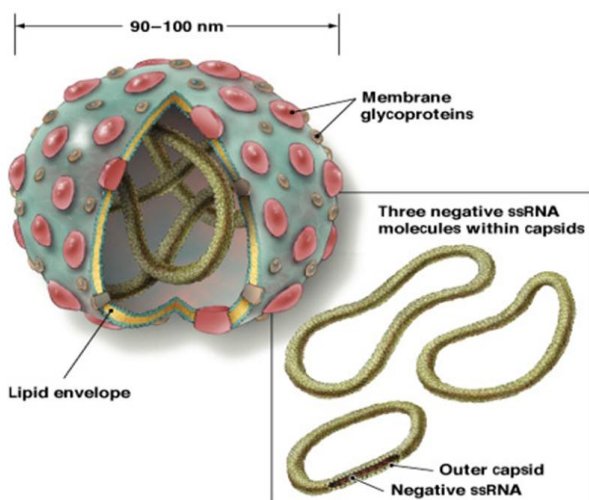
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ABSTRACT

People exposed to rodent secretions (such as urine or saliva) or with a history of recent travel to rural areas (potential rodent exposure) are at risk for developing HPS. Symptoms include abrupt onset of fever, chills, weakness, nausea, vomiting, and abdominal pain followed by difficulty breathing. HPS can be rapidly fatal if not identified and treated promptly. There isn't a vaccine for HPS, and treatment is mainly to support breathing, reducing symptoms, and avoiding side effects.

**INTRODUCTION**

Hantavirus pulmonary syndrome (HPS) is an infectious disease caused by hanta viruses (Sin Nombre hanta virus in most of the US). Transmission occurs when direct or indirect (airborne) contact is made with the saliva or waste products of rodents that carry the virus, most commonly the deer mouse (*Peromyscus maniculatus*). Initial symptoms may include fever, muscle aches, headache, cough, and/or difficulty breathing. Symptoms progress rapidly, and abnormally low blood pressure, shock, and or respiratory failure may occur.

Definition

Hantavirus pulmonary syndrome (HPS) is a rare but potentially life-threatening viral illness. The virus is transmitted to humans by inhaling infected rodent urine, droppings or saliva. The presence of infected rodents in and around the home environment is the primary risk factor for infection. Even healthy adults can develop this illness.

Incidence

HPS appears to affect males and females in equal numbers. Approximately half of the cases reported in the medical literature have affected Native Americans, and the majority of the remaining reported cases affected Caucasians. The population affected by HPS appears to be related to geographic location and exposure to rodent droppings as opposed to ethnic background. Because many of the documented cases have occurred in the south-western United States, a high percentage of the initially affected individuals were Native Americans. As the virus was found in others parts of the US, many others of varied ethnic backgrounds have been affected throughout the United.

Causes

- People most often get the virus if they breathe air that has been poisoned by waste or fluids from an infected rodent.
- People most at risk for HPS are those who are often in areas where rodents live. It's most common in spring and summer and in the western part of the United States.
- It also is found in Canada and South America. In Asia, other hantaviruses cause kidney problems instead of lung issues.

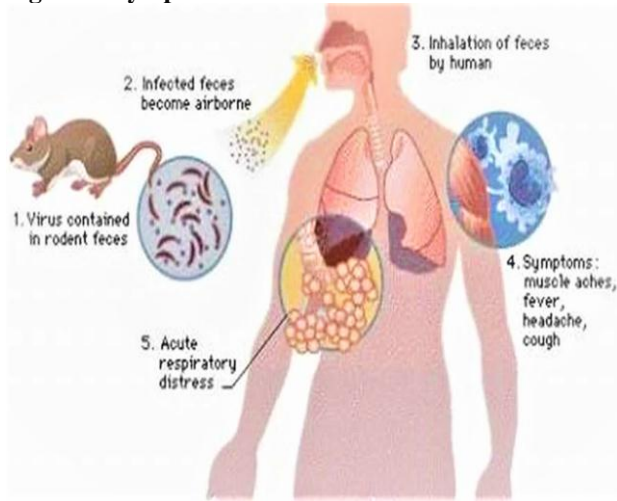
Risk Factor

- Opening and cleaning long unused buildings or shed.
- Housecleaning, particularly in attics or other low-traffic areas.
- Having a home or workspace infested with rodents.
- Having a job that involves exposure to rodents, such as construction, utility work and pest control.
- Camping, hiking or hunting.

PATHOPHYSIOLOGY

Hantavirus enters the body by inhaling of virus particles from infected rodent bodily fluids. The virus has a tendency to affect the heart, lungs and kidneys and reduces the function of these organs. The virus also enters the bloodstream where it continues to spread, replicate, and cause further organ damage.

Sign and Symptoms



- Fever greater than 101°F, chills, body aches, headaches
- Nausea and vomiting and abdominal pain And New rash (faint red spots)
- A dry cough followed by rapid onset of breathing difficulty
- tachypnea, rapid heartbeat (tachycardia), dizziness
- Joint pain, back and/or chest pain, and/or sweating.
- Excess fluid may accumulate in the lungs (pulmonary oedema), Hypoxemia
- Low blood pressure (hypotension), Shock, and/or respiratory distress.

Diagnostic Evaluation

Serological techniques, polymerase chain reaction (PCR), and immunohistochemistry (IHC) studies, as follows:

- RT-PCR can help detect viral RNA in blood and tissues and is the criterion standard for diagnosis. Diagnostic sensitivities and specificities of 100% and 94%, respectively, have been reported.^[9]
- IHC can help detect viral RNA in formalin-fixed tissues with specific antibodies.
- HPS is confirmed by Hantavirus immunoglobulin M (IgM)–and immunoglobulin G (IgG)–specific serology results, usually measured by performing an enzyme-linked immunoassay.

Treatment

- Treatment of HPS involves intensive care, including the monitoring of fluid balances, electrolyte balances, and blood pressure.

- Abnormally low levels of oxygen in the blood (hypoxemia) may require the administration of oxygen Shock and low blood pressure (hypotension) associated with HPS may be treated with drugs (i.e., dopamine and norepinephrine) to increase blood flow and thus improve blood and oxygen delivery to organs.
- In severe patients, Extra Corporeal Membrane Oxygenation (ECMO) therapy could be offered in specialized centres and may be the only chance of survival.

Prevention

- Keeping rodents out of your home and workplace can help reduce your risk of hantavirus infection. Try these tips:
- Block access. Mice can squeeze through holes as small as ¼ inch (6 millimetres) wide. Seal holes with wire screening, metal flashing or cement.
- Close the food buffet. Wash dishes promptly, clean counters and floors, and store your food — including pet food — in rodent-proof containers. Use tight-fitting lids on garbage cans
- Reduce nesting material. Clear brush, grass and junk away from the building's foundation. Set traps. Spring-loaded traps should be set along baseboards. Exercise caution while using poison-bait traps, as the poison also can harm people and pets.

Complications

- blood pressure drops
- Organs begin to fail
- Lungs fill with fluid
- Difficult to breathe.

CONCLUSION

However, could be early warning signs of HPS. These symptoms can occur anywhere between a few days to 6 weeks after your initial contact with rodents that may cause hanta virus, and are usually followed by nausea, vomiting, and abdominal pain. Within 2 to 10 days from the start of a hanta virus infection, symptoms can rapidly progress to those of respiratory failure requiring prompt and potentially life-saving medical attention. Local populations and patients should be educated and encouraged to seek local help in the event of exposure to rodents and the symptoms that suggest HPS.

BIBLIOGRAPHY

1. Mertz GJ, Hjelle BL, Bryan RT. Hantavirus infection, *Adv Intern Med.*, 1997; 42: 369-421.
2. Koster FT, Peters CJ, et al. Hantavirus pulmonary syndrome: a clinical description of 17 patients with a newly recognized disease, *N Engl J Med.*, 1994; 330: 949-55.
3. Doyle TJ, Bryan RT, Peters CJ. Viral hemorrhagic fevers and hantavirus infections in the Americas, *Infect Dis Clin North Am*, 1998; 12: 95-11.

4. Peters, C.J. "Emerging Infections: Lessons from the Viral Hemorrhagic Fevers". Transactions of the American Clinical and Climatological Association. Transactions of the American Clinical and Climatological Association, 2006; 117: 189–197. PMC 1500910. PMID 18528473.
5. Crowley, J.; Crusberg, T. "Ebola and Marburg Virus Genomic Structure, Comparative and Molecular Biology". Dept. of Biology & Biotechnology, Worcester Polytechnic Institute. Archived from the original on 2013-10-15.
6. Litman-Navarro, Kevin. "U.S. Woman Dies From Hantavirus, a Flu-Like Disease Spread by Rodents". Inverse.com.
7. "CDC - Hantavirus Pulmonary Syndrome (HPS) - Hantavirus". Cdc.gov. 2013-02-06. Retrieved 2013-07-07.
8. "Death at the Corners". Discover Magazine, 1993-12-01. Retrieved 2013-03-25.