

Good example of research paper on hantavirus

[Health & Medicine](#), [Disease](#)



Hantavirus refers to a life-threatening condition that is transmitted to humans by rodents. The symptoms of the Hantavirus disease are very close to the symptoms of influenza. The Hantavirus is a negative sense RNA, single stranded and enveloped virus that belongs to the Bunyaviridae family.

Spread of Hantavirus does not occur between humans and humans may only be infected with Hantaviruses after they get into contact with rodent urine, saliva, or feces. Different strains of Hantaviruses result in different diseases some of which are potentially fatal in humans. Some of these diseases include Hantavirus pulmonary syndrome (HPS) and Hantavirus hemorrhagic fever with renal syndrome (HFRS) (Casil, 2005).

There is an unclear understanding on the pathogenesis of the infections resulting from Hantavirus since there are no animal models that are available to describe the disease. The primary site where viral replication takes place in the body is also not known. However, in HFRS, the disease symptoms are seen in the blood vessels while in HPS the symptoms are seen in the lungs. In HFRS, there is an increase in the vascular permeability and reduction of blood pressure, as a result, of the endothelial dysfunction. The organ that is highly damaged is the kidney. In HPS, the organ that is mainly damaged is the kidney with the spleen, lungs and the gall bladder being the most affected organs. Some of the early symptoms that are presented in HPS are very similar to those seen in flu cases such as fever, fatigue and muscle aches. During the later stages of the disease, there may be other signs such as breath shortness, breathing difficulties and coughing.

In diagnosing Hantavirus, health care providers may do a number of physical examinations. These tests may reveal kidney failure, acute respiratory

distress syndrome, reduced blood pressure and low level of blood oxygen. The tests include complete blood count, kidney function test, complete metabolic panel, chest X-ray, liver function test and blood tests (CDC, 2014). Currently, there is no treatment that is specific in curing Hantavirus (Plotkin, Orenstein, & Offit, 2012). However, when the condition is recognized early and medical care is given effectively in intensive care, there are chances that the patient would do well. In the intensive care, treatment includes oxygen therapy, breathing machine or tubes especially in severe cases and medication known as ribavirin in the treatment of problems related to the kidney. Hantavirus infections that affect the lung have no effective treatment.

For a number of years, there have been efforts to develop Hantavirus vaccines that are effective and safe. Currently, there are a number of molecular and classical vaccines that are in pre-clinical stages with the hope that they will finally be approved. To date, there is no Hantavirus vaccine that has attained approval in the US. In china, use of Hantavirus vaccine has been associated with a significant reduction of HFRS cases to 20, 000 or less by 2007 (Schmaljohn, 2012).

Hantavirus infection has a very devastating prognosis. This mainly occurs due to the fact that the infection worsens at a very high rate. Chances of the lung failure developing are also high, which may result in death. Even in the cases where aggressive treatment is applied, there are chances that more than 50% of those with the disease in the lungs do not recover from the infection (CDC, 2014).

The rodents that carry the Hantavirus have been observed in a number of

the national parks in the U. S. with hikers and campers being in a greater chance of having the disease compared to the other people. There have been, however, very few cases that are associated with hiking or camping compared to those associated with rodent droppings at in residential houses. By the end of the year 2013, a total 637 people were reported to have Hantavirus Pulmonary Syndrome in the United States. From these people, 606 of them had the disease from 1993-onward. The number includes 63% male and 37% female with the mean age of those cases that have been confirmed being 37 years. Although the disease may strike any person, white people currently account for the highest number of cases (78%), followed by the American Indian at 18% of all the cases, African Americans at 2% and Asians accounting for 1% of cases. Cases of Hantavirus in the U. S. have been noted in more than 30 states with more than 95% of the cases that have been reported occurring in states that are in the western side of Mississippi river. Most of the disease incidents have been reported from those people who reside in rural areas (CDC, 2014).

Other than in the U. S. A., there are other countries where Hantavirus has been reported. Some of these countries include Bolivia, Argentina, Ecuador, Paraguay, Brazil, Venezuela, Uruguay and Panama. There has been no large outbreak that has been reported with most outbreaks being associated with environmental episodes that are not common such as high rainfall or periodic flowering of bamboo. In Argentina, there was an outbreak of 18 cases, which took place in El Bolson, in the province of Rio Negro. All these cases were characterized with similar signs of Hantavirus although there were cases that showed a flushed facial appearance that were evocative of

fevers resulting from viral hemorrhage. There has been another novel Hantavirus, which has been isolated in Africa known as Sangassou virus. The Sangassou virus also caused hemorrhagic fever that had renal syndrome (Klempa, et al., 2012).

In other countries, which include Colombia, Mexico, and Costa Rica there are rodents that carry viruses that are similar to the Sin Nombre virus that is found in the U. S. These Hantaviruses, however, are not linked to any kind of disease in humans.

In the prevention of the Hantavirus infection, several measures have been proven to be essential. These measures include reduction or elimination of rodent contact at home, campsites or in a working place. This may be achieved by making the surrounding environment unfavorable for rodents to stay through sealing up gaps and holes at home or garage. Elimination or reduction of rodent infestation may also be achieved by placing traps in and around the home. Cleaning up any leftover food may also reduce any chances of attracting rodents at home (CDC, 2014).

Just like the other viruses that are most feared and deadly, such as Ebola, Lassa, and Marburg fevers, the fact that Hantavirus is also hemorrhagic fevers may enhance its choice as a biological weapon. The most likely use of Hantavirus as a weapon is to use it in the same manner as the anthrax. This may include sending the virus to people through mails. Unlike anthrax, which can easily be grown in the laboratory, the Hantavirus is not easily grown and hence had use as a bioterrorism agent (Casil, 2005).

Reference List

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