

# Hantavirus Pulmonary Syndrome: A Viral Disease

Sowmya Laxmi

Microbiology Department, Andhra University, Visakhapatnam, India; E-mail: laxmisowmya95@gmail.com

Hantaviruses are a family of viruses spread mainly by rodents and may cause varied disease syndromes in people worldwide. Infection with any Hantavirus can produce Hantavirus disease in people. Hantaviruses within the Americas are referred to as “New World” Hantaviruses and should cause Hantavirus pulmonary syndrome (HPS). Other Hantaviruses, referred to as “Old World” Hantaviruses, are found mostly in Europe and Asia and should cause haemorrhagic fever with renal syndrome (HFRS). Each Hantavirus serotype features a specific rodent host species and is spread to people via aerosolized virus that's shed in urine, feces, and saliva, and fewer frequently by a bite from an infected host. The foremost important Hantavirus within us which will cause HPS is that the Sin Nombre virus, spread by the *Peromyscus maniculatus*.

The first Hantavirus isolate, Thottapalayam virus (TPMV), was from the spleen of an insectivore, *Suncus murinus*, captured in Vellore (India) in 1964. The Asian Hantavirus prototype, Hantaan virus (HTNV) was isolated in 1978 from an infected rodent and was named after the Han basin where the rodent was caught. The name 'hantavirus' was proposed in 1985, by Schmaljohn, a pioneer in Hantavirus research.

In 1993, there was an epidemic of a cardiopulmonary disease among young healthy individuals within the Four Corners region of Southwestern US (Mexico, Utah, Arizona and Colorado). Mortality was about 40%; the aetiological agent was a completely unique pathogenic Hantavirus, Sin Nombre virus (SNV). This outbreak changed the history of Hantaviruses, which till then were known to cause renal disease in Europe and Asia. Andes virus (ANDV), a South American serotype an isolate from human serum reportedly caused human-to-human transmission of HCPS in Peru at the turn of the 20th century. It had been isolated from the serum of a patient.

## Structure

Hantaviruses are enveloped RNA viruses with a negative-sense, tri-segmented genome. The massive (L), medium (M) and little (S) segments code for viral RNA-dependent-RNA polymerase, glycoprotein precursor (GPC) which is processed into the 2 envelope glycoproteins (Gn and Gc) and therefore the nucleocapsid (N) protein, respectively. Hantavirus N protein is that the most abundant viral protein within the virion and infected cells. There's a robust and rapid immune reaction to the present protein. The amino-terminus of the N protein comprising 100 amino acids is very antigenic hence utilized in diagnostic assays. B-cell epitopes are located within

N-terminal region while T-cell epitopes are distributed randomly throughout the protein. Between different strains of given Hantavirus serotype, the aminoalkanoic acid sequence of the N protein is usually conserved. Hantavirus N protein is that the most abundant viral protein within the virion and infected cells. There's a robust and rapid immune reaction to the present protein. The amino-terminus of the N protein comprising 100 amino acids is very antigenic hence utilized in diagnostic assays. B-cell epitopes are located within the N-terminal region while T-cell epitopes are distributed randomly throughout the protein. Between different strains of given Hantavirus serotype, the aminoalkanoic acid sequence of the N protein is usually conserved.

## Treatment

There are not any specific antiviral drugs for treatment of Hantavirus infections. Ribavirin (1-β-D-ribofuranosyl-1, 2, 4-triazole-3-carboxamide) has exhibited some in vivo and in vitro effects against replication of Hantaviruses. However, it remains ineffective for the treatment of HCPS. Supportive therapy is that the best method to regulate progression towards life-threatening symptoms. Careful fluid management, balance and haemodynamic monitoring are the simplest options for supportive therapy of HFRS and HCPS patients.

**Women Scientist**