Rotavirus

Rotavirus is a non-enveloped, double-stranded, linear RNA virus that is the most common cause of severe diarrhea in infants and young children. This virus is in the family of reoviridae and contains a segmented genome of 10-12 segments. Each gene segment encodes for one protein, except segment 9, which codes for two. The RNA is surrounded by a triple icosahedral protein capsid, and viral particles are not enveloped. By five years of age, nearly every child in the word has been infected with rotavirus at least once. With each infection, immunity develops and following infections are less severe. Therefore, adults are rarely affected. The virus is transmitted via fecal-oral route and damages the lining of the small intestine, leading to villous atrophy. The incidence of disease is more common in winter months and in day care centers from increased fecal-oral contact. The disease is usually easily managed, but more than 450,000 children under five years old continue to die from rotavirus infection each year in developing countries. Public health campaigns focus on oral rehydration therapy for management of disease.



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Characteristics

Reovirus
Rio de Janiero statue
This virus is in the family of reoviridae.

Non-enveloped
Nun-envelope
Rotavirus is a non-enveloped virus, also called a naked virus. Many viruses have envelopes, which are outer membranes that cover their protein capsids that help to enter host cells. However, because rotaviruses are non-enveloped, their capsids are responsible for attaching to host cells.

Double-Stranded
Double-dutch with Double Strands
This virus has a double-stranded genome as opposed to single-stranded.

RNA Virus
RNA-rhino
Rotavirus is an RNA virus, meaning its genetic code consists of ribonucleic acid, as opposed to deoxyribonucleic acid.

Linear
Line
This genome is linear as opposed to circular.

11 Segments
11 Segways
Rotavirus contains a segmented genome of 11 segments. Each gene segment encodes for one protein, except segment 9, which codes for two.

Triple Icosahedral Capsid
3x Ice-cathedral
The RNA genome is surrounded by a triple icosahedral protein capsid.

Most Common Cause of Diarrhea Worldwide
African, Asian, Mexican, and Red-headed Babies Sitting on Toilet
Rotavirus is the most common cause of severe diarrhea in infants and young children. By five years of age, nearly every child in the world has been infected with rotavirus at least once. With each infection, immunity develops and following infections are less severe.

Villous Atrophy
Village with @-trophies in Intestines
The virus is transmitted via fecal-oral route and damages the lining of the small intestine, leading to villous atrophy.

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Winter Months

Snowman

Incidence of rotavirus disease is higher in the winter months.

Day Care Centers

Day care kids with toys

Incidence of rotavirus disease is higher in day care centers due to increased fecal oral contamination.

Treatment

Oral Rehydration

Babies Rehydrating

Management of rotavirus diarrhea includes oral rehydration therapy.

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