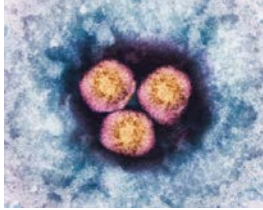


Norovirus Infectious Agent Information Sheet

Introduction



Noroviruses are non-enveloped (naked) RNA viruses with icosahedral nucleocapsid symmetry. The norovirus genome consists of (+) ssRNA, containing three open reading frames that encode for proteins required for transcription, replication, and assembly. There are five norovirus genogroups (GI-GV), and only GI, GII, and GIV infect humans. Norovirus belongs to the Caliciviridae family of viruses, and has had past names including, Norwalk virus and “winter-vomiting” disease.

Epidemiology and Clinical Significance

Noroviruses are considered the most common cause of outbreaks of non-bacterial gastroenteritis worldwide, are the leading cause of foodborne illness in the United States (58%), and account for 26% of hospitalizations and 10% of deaths associated with food consumption. Salad ingredients, fruit, and oysters are the most implicated in norovirus outbreaks. Aside from food and water, Noroviruses can also be transmitted by person to person contact and contact with environmental surfaces. The rapid spread of secondary infections occurs in areas where a large population is enclosed within a static environment, such as cruise ships, military bases, and institutions. Symptoms typically last for 24 to 48 hours, but can persist up to 96 hours in the immunocompromised.

Pathogenesis, Immunity, Treatment and Prevention

Norovirus is highly infectious due to low infecting dose, high excretion level (10^5 to 10^7 copies/mg stool), and continual shedding after clinical recovery (>1 month). The norovirus genome undergoes frequent change due to mutation and recombination, which increases its prevalence. Studies suggest that acquired immunity only last 6 months after infection. Gastroenteritis, an inflammation of the stomach and small and large intestines, is caused by norovirus infection. Dehydration is the most common complication and can result in significant morbidity and mortality in children, the elderly, and the immunocompromised in developing nations. There are no specific therapies that exist for norovirus infection, though treatment consists mostly of rehydration. No vaccines are currently available for noroviruses.

Diagnosis

RT-PCR, electron/immuno-electron microscopy, and EIA/ELISA are the current methods used to test human stool or serum samples for noroviruses. RT-PCR is the preferred method because it is the most sensitive, quickest, and has the ability to determine genogroups. Only one FDA-approved assay for norovirus detection exists (i.e. Ridascreen Norovirus 3rd Generation EIA by R-Biopharm AG), though it has poor sensitivity and cannot be used to diagnose individual patients.

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