Sapovirus: A Cause of Gastroenteritis Outbreaks

Sapoviruses (SaVs) and noroviruses (NoVs) are human caliciviruses that are recognised as causes of acute gastroenteritis (GE) worldwide. Sapovirus, discovered in 1977, is an uncommon cause of norovirus like outbreaks. It is clinically indistinguishable from norovirus and the infection prevention and control measures are the same as for norovirus. Sapovirus clinical symptoms last from 24 to 105 hours (median duration, 48 hours) and include diarrhoea (88%), vomiting (49%), and fever (23%).

Among the many causes of viral gastroenteritis, the highly contagious noroviruses are of chief concern, as they are responsible for outbreaks in institutional settings, on cruise ships, and in schools. However, in a subset of viral gastroenteritis outbreaks in which norovirus is not detected, causes may include astrovirus, adenovirus, rotavirus and sapovirus. Calicivirus (SaV and NoV) infections are increasing globally, and sapovirus may have the same mechanisms of persistence in humans as norovirus, such as low infectious dose, high infectivity, high level of shedding, high environmental persistence, multiple transmission routes, and prolonged shedding after clinical recovery.

NoV infections are common in all age groups and are responsible for about 80% of all acute gastroenteritis outbreaks. SaV infections are less common and until recently, thought to cause disease primarily in children, usually under the age of 5 years. However, SaVs are now being reported as an occasional cause of outbreaks in hospitals and other health care facilities. The age groups affected in these facilities have ranged from young adults to the elderly, suggesting less age restriction for illness than previously thought (Fig 3). Although SaV-associated diarrhoea is generally mild, severe cases can occur.

Aetiology of Netherlands outbreaks from 1 November 2007 to 1 January 2009. Of the 478 outbreaks sampled, 74.6% were caused by noroviruses, 4.4% by rotaviruses and 4.0% by sapoviruses.
Epidemiology of outbreaks of sapoviruses In the Netherlands the most common setting of 19 sapovirus-associated outbreaks was nursing homes (n = 12 [63%]), followed by hospitals (n = 5 [26%]) and child day care centres (n = 2 [11%]).

Between 2002 and 2009, public health in Oregon and Minnesota investigated more than 2,000 gastroenteritis outbreaks at various locations, including long-term care facilities, schools, prisons, and lodging facilities. Most were caused by norovirus (52%) and bacteria/parasites/other agents (22%).

Of these outbreaks that were negative for both norovirus and bacteria, 66% were investigated more fully. Of these 23% were caused by sapovirus and outbreak tracing showed that 66% occurred in long-term care facilities and 10% in schools; 67% occurred in colder months; and 86% of infections involved person-to-person transmission.

When gastroenteritis viruses are present each tiny gram of faeces can contain over a billion viral particles. If you cut (or rinse/wash) a gram into a million minute pieces, then cut (or wash) one of these into a thousand little pieces, each of these new pieces would be one part per billion – enough to cause infection if eaten.

References: