

The Gap between Molecular Characterizations and Infection Control of the Viral Foodborne Illnesses in Saudi Arabia

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Foodborne diseases are mainly due to bacterial infection, however foodborne outbreak has been linked to viral infection in some occasions. Viral foodborne diseases are mainly causing gastroenteritis. The purpose of this review is to evaluate studies of animal and public health for foodborne viral diseases in Saudi Arabia and to find the gap between the clinical findings and the source of infection for the foodborne viral illnesses. Classically, viral pathogens were detected by culture-based and immunological methods; however, nowadays molecular methods are used more commonly using PCR. A step further was the development of real-time PCR that allows faster and quantitative assays. In the other hand, molecular detection requires continuous updating of the assays as the viruses evolve continuously especially the RNA viruses. The sources of known zoonotic viruses in Saudi Arabia are limited. Among the zoonotic viruses are norovirus, hepatitis E virus, and Enteric adenovirus. Although whole genome sequencing of some viruses especially those which have vaccines available, a partial phylogenetic informative genomic sequencing can be sufficient in tracking and tracing an outbreak or infection source. All samples obtained in the studies from Saudi Arabia focused on symptomatic cases and ignored asymptomatic and mainly from children under the age of 6 years. A good practice to control and avoid any foodborne outbreaks is to obtain and analyse large and efficient set of samples from individuals with and without primary disease from all around the kingdom of Saudi Arabia. A large number of factors can affect human exposure to viral infection and susceptibility to viral-associated diseases. Studies on animal viruses that causing gastroenteritis in Saudi Arabia are very limited which make it difficult for interpreting the source and relationship between infection outbreaks in humans. The importance of full characterization of viruses causing foodborne and gastroenteritis illnesses would help to develop a more effective vaccine and diagnostic tools. Co-infection of two viruses causing the same illness are likely especially with noroviruses and also co-infection with two different subtypes of hepatitis E virus is possible. These possibilities cannot be determined easily by routine check on single causative Agent and missing the molecular characterization of the targeted viruses.