Experimental infection of *Macaca nemestrina* with a Toronto Norwalk-like virus of epidemic viral gastroenteritis

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Keywords

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Abstract

Norwalk virus (NV) and Norwalk-like viruses (NLVs) are common etiologic agents of viral gastroenteritis. Viral gastroenteritis is a common disease that is highly transmissible, spreading rapidly through families, institutions, and communities. Because methods for in vitro cultivation of Norwalk etiologic agents are not available, information regarding this syndrome has come largely from studies in human volunteers. Sequential passaging of an NLV through an immunoincompetent newborn pigtail macaque (*Macaca nemestrina*) may allow for the adaptation of a human NLV to a primate host, thus providing an animal model for investigating this disease. A fecal filtrate of human origin containing NLV, Toronto virus P2-A, was obtained from a patient during an epidemic of viral gastroenteritis. The filtrate was administered via nasogastric tube to three newborn pigtailed macaques. Clinical illness, which was characterized by diarrhea, dehydration, and vomiting, occurred in three monkeys. Reverse transcription-polymerase chain reaction (RT-PCR) and oligonucleotide probe analysis of RNA extracted from the stool samples following infection revealed viral RNA in all inoculated monkeys. Infection was also transmitted experimentally by feeding two additional newborn macaques a fecal filtrate prepared from the three previously infected animals. Detection of viral RNA in the stools of animals that received the fecal filtrate indicates that viral replication occurred in association with clinical illness. The susceptibility of *Macaca nemestrina* to infection with a Norwalk-like agent will facilitate the study of the mechanisms of the pathogenesis of NLV. This system may also have the potential to serve as a vaccine test model for human epidemic viral gastroenteritis. J. Med. Virol. 66:400-406, 2002. © 2002 Wiley-Liss, Inc.