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The original calicivirus: An emergent human pathogen implicated on three continents in the occurrence of severe disease including Hepatitis

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Eighty-two years ago (1932) in Orange County California, USA, the first Calicivirus was discovered. That virus, named Vesicular Exanthema of Swine Virus (VESV), was species specific for domestic swine and designated a foreign animal disease agent, then eradicated and classified a Picornavirus. But, negative-stain electron microscopy revealed that VESV was a new virus with 32 calices (cups) in the capsid leading to the name "Calicivirus". This group is now organized into the family Caliciviridae having five genera; Norovirus, Sapovirus, Lagovirus, Nebovirus and the Vesivirus. Two Vesivirus species are feline calicivirus, and the original calicivirus, VESV. Only genus Vesivirus has been routinely propagated in vitro. Since 1972 the known host range for VESV expanded to include feral swine, fish, shellfish, reptiles, and marine mammals. VESV was not eradicated and by 1990, was a proven pathogen of cattle, five species of primates and humans. Throughout this host-range, vesicular disease was uncommon. Instead, VESV displayed a diversity of tissue tropisms. Hepatitis, myocarditis, encephalitis, pancreatitis, pneumonia, spontaneous miscarriage, hemorrhagic/DIC syndrome, diarrhea and a highly significant rise in serum transaminase levels were associated with VESV presence and/or anti-vesiviral antibodies. Human sera from three Continents were vesivirus antibody positive for association between blood transfusions and conditions causing elevated transaminases including non A-E hepatitis ($P=.001$). Food, water and sea-foods are probable sources of exposure and the human blood supply has shown VESV contamination. Studies find anti-VESV antibody presence in blood cleared for transfusions and some of these units have been vesiviremic.

Biography

Smith received his DVM from the School of Veterinary Medicine, Washington State University, MS and Diplomate status with the American College of Laboratory Animal Medicine at Texas A & M University and the US Air Force School of Aerospace Medicine. His PhD is from the University of California Berkeley. He served 22 years in the US Air Force 11 of which were on loan to the Office of Naval Research to study Ocean Zoonoses. He has established and headed-up "Laboratories for Calicivirus Studies" at the Naval Biosciences Laboratory, Naval Ocean Systems Center/San Diego Zoo and Oregon State University. He served on and chaired the American Veterinary Medical Association's Counsel on Research and has been a decades-long member of the Calicivirus Study Group for the International Committee on Taxonomy of Viruses. Dr. Smith is a Professor Emeritus at Oregon State University, sole owner of Calicitech International LLC and the US Patent "Diagnosis, Prevention and Treatment of Calicivirus Infection In Humans", which is the seminal patent addressing human vesiviral infection and disease.

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