Transmission of foot-and-mouth disease from persistently infected carrier cattle to naïve cattle via transfer of oropharyngeal fluid.

Control and eradication of foot-and-mouth disease (FMD) is impeded by the existence of a persistent, subclinical, phase of infection in ruminants; animals with this status are referred to as carriers. However, the epidemiological significance of these FMD virus (FMDV) carriers is uncertain. In the current investigation, the contagion associated with FMDV carrier cattle was investigated by exposure of susceptible cattle and pigs to oropharyngeal fluid (OPF) or tissues harvested from persistently infected cattle. Naïve cattle were inoculated through intra oropharyngeal deposition of unprocessed OPF that had been collected from FMDV carriers at 30 days post infection. These inoculated cattle developed clinical FMD of similar severity as animals that had been infected with a high-titer inoculum. In contrast, pigs exposed via intra oropharyngeal inoculation of the same OPF, or by ingestion of nasopharyngeal tissues harvested from the same cohort of persistently infected cattle, did not develop FMD. These findings indicate that there is demonstrable contagion associated with FMDV carrier cattle despite the lack of evidence for transmission by direct contact. The findings presented herein provide novel information that should be considered for FMD risk mitigation strategies.

General information
Publication status: Published
Organisations: National Veterinary Institute, Virology, U.S. Arid Land Agricultural Research Center
Corresponding author: Arzt, J.
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Number of pages: 31
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: mSphere
Volume: 3
Issue number: 5
ISSN (Print): 1535-9786
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2018): SJR 2.178 SNIP 1.245
Web of Science (2018): Impact factor 4.447
Web of Science (2018): Indexed yes
Original language: English
Keywords: FMDV, Carrier, Cow, Foot-and-mouth disease, Foot-and-mouth disease virus, Risk, Transmission, Virus
Electronic versions: e00365_18.full.pdf
DOIs: 10.1128/mSphere.00365-18

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