Detection of foot-and-mouth disease virus RNA in pharyngeal epithelium biopsy samples obtained from infected cattle: Investigation of possible sites of virus replication and persistence

Foot-and-mouth disease (FMD) is a highly contagious viral infection of significant financial importance to the export and trade of agricultural products. The occurrence of persistently infected “carriers” of FMD-virus (FMDV) in ruminant species adds further complications to disease control. There have been significant discrepancies in reports regarding the pathogenesis of FMDV infection in cattle with specific emphasis on the anatomical sites involved in early and persistent virus replication. In this study, collection of small biopsy samples from the dorsal soft palate (DSP) of live animals was used to investigate the level of FMDV RNA present at this site at sequential time points during the infection. Results were compared to measurements of virus excretion in samples of oropharyngeal fluid collected at corresponding time points. Possible sites of virus persistence were investigated through measurements of the levels of FMDV RNA in the DSP as well as mandibular and retropharyngeal lymph nodes beyond 28 days after infection. Results indicated only low levels of FMDV RNA present in samples of pharyngeal epithelia during both early and persistent phases of infection with significantly higher levels of virus detected in pharyngeal excretions. It is concluded that the targeted area for sampling within the DSP does not harbour significant levels of virus replication during acute or persistent FMDV infection in cattle. Furthermore, the DSP and the mandibular and retropharyngeal lymph nodes cannot be concluded to be principal sites for persistence of FMDV.

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