Short time window for transmissibility of African swine fever virus from a contaminated environment

Since the introduction of African swine fever virus (ASFV) into the Baltic states and Poland in 2014, the disease has continued to spread within these regions. In 2017, the virus spread further west and the first cases of disease were reported in the Czech Republic and Romania, in wild boar and domestic pigs, respectively. To control further spread, knowledge of different modes of transmission, including indirect transmission via a contaminated environment, is crucial. Up until now, such an indirect mode of transmission has not been demonstrated. In this study, transmission via an environment contaminated with excretions from ASFV-infected pigs was investigated. Following euthanasia of pigs that were infected with an isolate of ASFV from Poland (POL/2015/Podlaskie/Lindholm), healthy pigs were introduced into the pens, in which the ASFV-infected pigs had been housed. Introduction was performed at 1, 3, 5 or 7 days, following euthanasia of the infected pig groups. Pigs, that were introduced into the contaminated environment after 1 day, developed clinical disease within 1 week, and both ASFV DNA and infectious virus were isolated from their blood. However, pigs introduced into the contaminated pens after 3, 5 or 7 days did not develop any signs of ASFV infection and no viral DNA was detected in blood samples obtained from these pigs within the following 3 weeks. Thus, it was shown that exposure of pigs to an environment contaminated with ASFV can result in infection. However, the time window for transmissibility of ASFV seems very limited, and, within our experimental system, there appears to be a rapid decrease in the infectivity of ASFV in the environment.

General information
Publication status: Published
Organisations: National Veterinary Institute, Virology, Epidemiology
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Pages: 1024-1032
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Transboundary and Emerging Diseases
Volume: 65
Issue number: 4
ISSN (Print): 1865-1674
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2018): CiteScore 3.35 SJR 1.227 SNIP 1.564
Web of Science (2018): Impact factor 3.554
Web of Science (2018): Indexed yes
Original language: English
Keywords: African swine fever virus, Environment, Fomite, Haemorrhagic disease, Virus transmission
DOIs:
10.1111/tbed.12837
Source: FindIt
Source-ID: 2396585334
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review