Swine Vesicular Disease
Summary

Introduction

1. This note briefly summarises the analysis undertaken by a DISCONTOOLS group of experts on Swine Vesicular Disease (SVD). They reviewed the current knowledge of the disease, considered the existing disease control tools, and evaluated the presence of gaps in the availability and quality of the control tools. Full details of the report can be downloaded from the website at http://www.discontools.eu/ and the gap analyses matrices for Swine Vesicular can be found on the website and downloaded here.

Disease profile

2. SVD virus is a member of the genus *Enterovirus* within the family *Picornaviridae*. Analyses based on full genome sequences support the hypothesis that SVD virus originated around 1960, from recombination between the human pathogens coxsackievirus B5 and another enterovirus B serotype, most likely coxsackievirus A9. Swine (domestic and wild pigs) are the only susceptible species relevant for transmission. SVDV was first identified in Italy in 1966 and epidemics of SVD occurred in some European countries and eastern Asia in the 1970s and early 1980s. Subsequently, the disease persisted in Italy and reappeared sporadically in the European Union outside Italy. The circulation of SVDV in Italy lasted more than twenty years and was controlled by active serological and virological surveillance to identify infected animals. The last outbreak of SVD in Italy was detected in 2015 and no serologically positive pigs have been detected since 2017. No further outbreaks of SVD have been reported elsewhere in Europe or worldwide. A second SVD virus (SVDV-2) has been found which was derived from coxsackievirus B4. It caused a vesicular disease but was only detected in Central Russia in 1975.

3. During the circulation in Italy, SVD became a milder condition characterised by sub-clinical infection with low morbidity and no mortality. Due to this frequent subclinical nature of SVD virus infection and the lack of information on surveillance, the global distribution of the virus cannot be ascertained with certainty.

Risk

Serological investigations conducted for animal movements have shown no positivity, suggesting an absence or a low risk of virus circulation

Diagnostics

4. Currently available diagnostic tests are well validated and described in the WOAH Terrestrial Manual. The 5B7-competitive ELISA for antibody detection underwent extensive validation in several EU National Reference laboratories, before being considered as the reference screening test. Currently, two commercial ELISA kits for detection of antibodies are available, based on the same principle and perform very similarly to the 5B7-competitive ELISA. Extensive experience suggests that for antibody detection ELISA is very reliable and robust, comparable to the Virus Neutralisation Test (VNT), which, however, remains the reference test to confirm singleton reactors identified by ELISA.
   Conventional and real-time RT-PCR assays reported in the WOAH manual are well-established tests and have proved to be more sensitive and reliable than virus isolation (indicated as the gold standard test).
   Reagents for antigen detection based on ELISA and for antibody detection by 5B7-competitive ELISA (as described in the WOAH manual) are available from the WOAH reference laboratories.

Vaccines

5. There is currently no commercial vaccine available against SVD and vaccination is not permitted in EU. Stamping out infected herds only has been the main strategy in Europe and was effective. There has never been a need for the use of SVD vaccine although experimental studies show they work.

Pharmaceuticals

6. There is no need for pharmaceuticals to cure or control SVD.

Knowledge

7. The disease is no longer included in the list of WOAH notifiable diseases, although it was previously included due to the similarity of clinical SVD to FMD. The most recently reported SVD infections were subclinical and therefore unapparent. In case of clinical disease, laboratory diagnostic tools that can effectively discriminate between FMD and SVD are needed. Full details of the gaps are shown in the Disease and Product analysis for Swine Vesicular Disease on the DISCONTOOLS web site.

Conclusions

8. The main importance of SVD is that it can be clinically indistinguishable from FMD, and any outbreaks of vesicular disease in pigs must be assumed to be FMD until investigated by laboratory tests and proven otherwise. Because good diagnostic tests are available for this purpose and because the worldwide incidence of clinical SVD has diminished, the importance of SVD has decreased. SVD was removed in 2018 from the list set out in Annex II of EU Regulation 2016/429.