Network for wildlife health surveillance in Europe

Diagnosis Card

African Swine Fever

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Last update

10.12.15

Etiology

African swine fever virus (ASFV), only member of the genus *Asfivirus* in the family *Asfarviridae*.

Affected species (wildlife, domestic animals, humans)

ASFV infects mainly suids: the Warthog (*Phacochoerus africanus*), the Bushpig (*Potamochoerus larvatus*), the Red River Hog (*Potamochoerus porcus*), the Giant Forest Hog (*Hylochoerus meinertzhangeni*) and the Eurasian wild boar and feral/domestic pig (*Sus scrofa*).

Epidemiological characteristics and disease course

ASFV is mostly transmitted by direct contact between animals but indirect contact though cannibalism, infected fomites, food or water and through arthropod vectors is possible. ASFV is maintained in a wild cycle in Africa where the Warthog and the soft tick *Ornithodoros moubata/porcinus* are involved. Other African suids may also be occasionally involved in the epidemiology of ASFV, but more likely by direct contacts and not through infected soft tick contacts. In Europe the soft tick *O. erraticus* may act as a reservoir of ASFV. Clinical signs following infection by ASFV are only observed in domestic and wild *Sus scrofa*. Peracute, acute, chronic and subclinical manifestations of ASFV infection may happen in wild boar although only peracute, acute and subclinical forms have been reported.

Clinical signs

Gross lesions observed in naturally infected wild boar consisted of severe, diffuse haemorrhages which can be scattered in different organs but are more commonly found in lymph nodes (mesenteric, gastrohepatic and mediastinal lymph nodes),spleen and kidneys.

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Histological lesions

Microscopic findings consist of severe necrosis and depletion of lymphocytes in paracortical areas of the lymph nodes and similar but more moderate changes in lymphoid follicles of the lymph nodes and spleen. Macrophages and monocytes appear with a cytopathic effect.

Differential diagnosis

ASF clinical outcome resembles other diseases like classical swine fever, salmonellosis, erysipelas or other septicaemias.

Criteria for diagnosis

The clinical outcome is not sufficient to diagnose ASF. Diagnosis may relay in the performance of laboratory tests. It has to be considered that peracute course may cause death in wild boar without seroconversion and hence serological tests may not be effective.

Recommended diagnostic method(s) and preferred samples (incl. recommended amount and appropriate storage)

Laboratory diagnostic tests employed to test domestic swine are also recommended to test wild suids. ASF diagnosis should include parallel detection of virus and antibodies for obtaining a full picture of the epidemiological situation in the area. Several diagnostic tests have been approved and validated for detecting the 22 genotypes of ASFV, both for detecting of ASFV and antibodies:

(a) Direct isolation/antigen detection:

Specific samples for direct isolation/detection of ASFV recommended by the OIE are blood, spleen, lymph nodes, tonsil and kidney that should be kept at 4°C or at -20ºC for long transportations. In bad conserved carcasses, bone marrow would be the sample of choice. The use of filter papers and cotton swabs has also been tested with success. Four different tests may detect the presence of ASFV:

- *Isolation and hemadsortion*: inoculation of primary cultures of pig monocytes or bone marrow cells with presence of erythrocytes. The appearance of rosettes is very characteristic of ASF, although some isolates are not haemadsorbent. It must be done for the first notification of ASF in free countries.
- *Immunofluorescence test*: for detecting ASFV antigen in tissue smears, as well as for the identification of non-haemadsorbent isolates in virus isolation.
- *PCR*: quick, sensitive and specific detection method in animal tissue samples and exudates, even in bad preserved samples. Several protocols have been developed for ASF diagnosis including conventional and real-time PCRs, most of them for amplifying partially the gene encoding vp72 that is conserved among the different genotypes.

(b) Detection of specific anti-ASFV antibodies:

- *ELISA*: is the prescribed test of the OIE for international trade.
- *Indirect fluorescent antibody test (IFAT)*: recommended in substitution of the ELISA or as a confirmatory test of ELISA positive samples.
- *Immunoblotting test*: alternative to the IFAT.
- *Immunoperoxidase test:* for confirmation of ELISA results.

APHAEA protocol (for harmonization at large scale)

The ELISA test is recommended for not-hemolised sera but parallel real-time PCR testing of blood, tissue samples and exudates is recommendable.

Laboratories that can be contacted for diagnostic support

CISA (EU Reference Laboratory for ASF), Spain (http://www.inia.es/)

Dr. J.M. Sánchez-Vizcaíno, Universidad Complutense de Madrid, Spain (jmvizcaíno@vet.ucm.es)

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Recommended literature

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