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Long-term monitoring of classical swine fever in wild boar (*Sus scrofa* sp.) using serological data

Abstract -

In the European Community, epizootics of classical swine fever (CSF) in the wild boar (*Sus scrofa*) are compulsorily monitored because transmission may occur between wild boars and domestic pigs, causing heavy economic losses to the pork industry. The estimation of incidence in populations of wild boars is generally based on viro-prevalence. However, viral isolation becomes rare when the incidence is low because the virus cannot be detected for more than a few weeks following infection. On the contrary, seroprevalence is detectable at low incidence levels, because antibodies can be detected for the lifetime of the infected animal. We thus attempted to analyse the long-term evolution of CSF incidence using serological data. The data came from France, where CSF had been monitored from 1992 to 2002, and where the virus has not been detected since 1997. We assumed that the overall seroprevalence would estimate the proportion of immune wild boars, that seroprevalence in juveniles would approximate incidence and that seroprevalence in different age classes would show the evolution of incidence in a given cohort. Spatial and temporal trends of incidence and seroprevalence were explored using logistic modelling and the spatial trend was analysed using polynomial regression. In 1992, incidence peaked in the northern area. After 1993, incidence decreased but remained the highest in the northern area. After 2000, no seropositive juvenile was observed, suggesting the extinction of the epizootic. Our results support the reliability of serological monitoring since it allowed a longer detection of viral transmission and provided more information on the spatio-temporal evolution of incidence than did viral isolation. We advocate that the highest persistence of infection in northeastern France is not independent from infection persistence in Reinland-Pfalz (Germany). Such persistence may be due to favourable local conditions and/or the social organisation of wild boars.

Key words

: classical swine fever / wild boar / spatial / monitoring / serology

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