Classical swine fever (CSF) marker vaccine - Trial I. Challenge studies in weaner pigs - DTU Orbit (05/04/2019)

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Two commercial marker vaccines against classical swine fever virus (CSFV) and companion diagnostic tests were examined in 160 conventional pigs. To test the vaccines in a "worst case scenario", group of 10 weaners were vaccinated using a single dose of an E2 (gp55) based vaccine at days -21, -14, -10 or -7, and subsequently challenged at day 0. The challenge virus was CSFV 277, originating from a recent outbreak of classical swine fever (CSF) in Germany. In all groups, only 5 out of 10 pigs were challenged; the remaining 5 pigs served as vaccinated contact controls. Also, three control groups, each consisting of 10 non-vaccinated pigs, were challenged in parallel to the vaccinated animals. CSFV could be isolated from all non-vaccinated pigs. Among these pigs 40% displayed a chronic course of the infection (virus positive for more than 10 days). Pigs vaccinated 21 or 14 days before challenge displayed no clinical signs of CSFV after challenge. However, they were still able to replicate CSFV when challenged, as measured by reisolation of CSFV from leukocytes of the directly challenged pigs. CSFV could be isolated from the leukocytes of 25% of the pigs vaccinated 21 days before challenge and 50% of the pigs vaccinated 14 days before challenge. Chronic infection was not observed, but transmission to one vaccinated contact pig occurred. From all pigs vaccinated 10 or 7 days before challenge, CSFV could be reisolated. We observed a chronic course of infection in 5% of pigs vaccinated 10 days before challenge and in 30% of pigs vaccinated 7 days before challenge. The mortality rate was 20% in the pigs vaccinated 10 days before challenge, and varied between 20 and 80% in pigs vaccinated 7 days prior to challenge. The contact animals had lower mortality (0-20%) than directly challenged pigs, probably mirroring the delayed time point of infection. There was thus some protection against clinical illness by both marker vaccines, but not a solid protection against infection and virus shedding. The efficacy of the vaccine was best if used 3 weeks before challenge and a clear correlation between time interval from vaccination to challenge and the level of virus shedding was observed. Each vaccine had its own accompanying discriminatory ELISA, but 18% of the virus positive pigs never seroconverted in these tests.

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