Time course of the serological response to Yersinia enterocolitica O:3 in experimentally infected pigs

A total of 25 pigs inoculated with Yersinia enterocolitica serovar O:3 and 25 un-inoculated controls were followed weekly by sampling blood and faeces for 70 days post infection (p.i.). All inoculated pigs were faeces culture positive from day 5 to 21 p.i., whereafter shedding of bacteria declined to <10% of the pigs at day 49 p.i. and to 0% at day 68 p.i. All control pigs remained Y. enterocolitica O:3 culture negative. When examined in an indirect ELISA using purified LPS from Y. enterocolitica O:3, sera from all inoculated pigs showed significantly higher optical densities (OD) as compared to the control group. All inoculated pigs had seroconverted at day 19 p.i. and remained seropositive until slaughter at day 70 p.i. The maximum mean anti-LPS response was observed at day 33 p.i. with a positive/negative ratio of 780. No cross-reactions were observed with sera from 21 pigs, infected with Salmonella typhimurium. At necropsy at day 70 p.i., Y. enterocolitica O:3 was isolated from the tonsils of 20 inoculated pigs, whereas the rest of the gastrointestinal tract and associated lymph nodes were culture negative. The remaining inoculated pigs and all control pigs were culture negative at necropsy at day 70 p.i. The ELISA seems to be a promising alternative to bacteriological culture for detection of Y. enterocolitica O:3 infection in pig herds.