We have previously reported that hog cholera (HC) viral strains were divided into 2 groups on the basis of the difference in the degree of neutralization by antibody against bovine viral diarrhea (BVD) virus, and these serological properties have been shown to be correlated with their pathogenicity. In this report, we describe the antigenic and pathogenic properties of pigs chronically infected with HC virus and investigated.

MATERIALS AND METHODS

Antigenic: All strains were tested for the degree of neutralization by both antisera against the strain T20-5 of BVD virus and the ALC strain of virulent HC virus. Antisera used were prepared from goats by inoculation with respective viruses, and END (extraction of Newcastle disease virus) neutralization test was applied in the experiments. Inoculation of pigs was performed by intraperitoneal or intramuscular injection. Some pigs were examined for viral load in tissues, histopathology, and immunohistochemistry.

RESULTS

Antigenic: HC viral strains tested were divided into 2 groups on the basis of the difference in the degree of neutralization by the BVD and virulent HC virus antibodies. Ten of 33 strains were poorly neutralized by the BVD antibody, but well by the antibody to virulent HC virus. They were considered as the members of the subgroup A. Twenty one strains were readily neutralized by the BVD antibody, and classified as the members of the subgroup B. One strain showed property of intermediate-type of the subgroups A and B, and the other strain belonged to neither subgroup A nor B.

Pathogenic: Pathogenicity was higher in the strains of subgroup A than those of the subgroup B. All strains of the subgroup A produced acute and typical HC in inoculated pigs, and they died within 14 days after infection. Duration of the disease in pigs inoculated with 5 different strains of the subgroup A was 7.5, 8.5, 10, 10, and 12 days on average, respectively. On the other hand, the strains of the subgroup B induced subacute or chronic HC in inoculated pigs. Pigs inoculated with 4 different strains of the subgroup B died between 14-17, 14-21, 17-20, and 17-25 days after infection, respectively.

The Kanagawa strain, which is one of representative strain of the subgroup B, produced various forms of HC. In inoculated pigs. Three of 15 pigs inoculated developed subacute HC and died 2-3 weeks after infection. Ten pigs developed chronic HC and died 4-14 weeks after infection. The other pigs with chronic HC, but completely recovered with producing high HC antibody. The other pig showed no clinical signs of HC, but HC antibody was detected in serum 3 weeks after infection. Probably, subclinical infection might occur in this pigs.

Responses of pigs with chronic HC: Most of pigs inoculated with the Kanagawa strain developed chronic HC. They showed typical signs until death occurred. Virus could be detected in sera throughout the course of the disease. Pigs with chronic HC produced serum neutralizing antibody, and virus and antibody were detected simultaneously from sera. Virus could be isolated not from uninfected but from diluted serum.

CONCLUSIONS

This study confirmed our previous report (Kamijo et al., 1977) that HC viral strains can be classified into 2 groups (subgroups A and B) on the basis of the degree of neutralization by antibody to virulent HC virus. No antibody could be recovered from the kidney of pigs inoculated with a vaccine strain of HC virus, even though they produced high serum neutralizing antibody.

SELECTED REFERENCES
