Distribution of Antibodies against Swine and Hong Kong Influenza Viruses among Pigs in 1977

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Pigs in 1977.* Tohoku J. exp. Med., 1978, 126 (2), 199-200 — The distribution
of antibodies against swine and Hong Kong influenza viruses among hogs in
Miyagi Prefecture was examined. Of 456 serum specimens collected since July
1977, 12 were found to be positive against swine influenza virus and 6 against Hong
Kong influenza virus. Such serological results reveal that swine and Hong Kong
influenza viruses coexist in Japanese hogs and suggest that swine influenza virus
reappeared in mid-1977. — swine and Hong Kong influenza

As previously described in 1976, we were unable to find any positive sera against swine influenza virus-A/New Jersey/8/76 (Hsw1N1) after the New Jersey event (Yamane et al. 1978). Since then we have continued serological surveillance of hogs in Miyagi Prefecture using swine and Hong Kong influenza viruses. We now describe the results obtained in 1977-78.

Sera were collected at 3 weekly intervals from 6 months old hogs at the Sendai City Slaughterhouse. Collection began at the end of July 1977 and a total of 456 specimens have been taken up to the present time (January 1978). Pretreatment of swine sera to remove non-specific inhibitors and hemagglutinins was carried out as previously described (Yamane et al. 1978) and swine influenza virus, A/New Jersey/8/76 (Hsw1N1), Hong Kong influenza virus, A/Victoria/3/75 (H3N2) and A/FM/1/47 (H1N1) were used in the hemagglutination inhibition (HI) tests.

Although all the swine sera were shown to be negative against the A/New Jersey/8/76 strain in 1976, 12 positive sera against this virus have appeared since the beginning of September 1977 (upper diagram of Fig. 1). As for Hong Kong influenza virus, A/Victoria/3/75, the positive ratio was 6.5% in 1976 but, as shown in the lower diagram of Fig. 1, this has now decreased to 1.3%. The positive ratio to A/New Jersey/8/76 was two times higher than that to A/Victoria/3/75.

After the appearance of a new type of influenza virus (H1N1) in Mainland China and Russia in 1977, we included the A/FM/1/47 (H1N1) strain in our sero-survey, but we could not find any positive sera.

In addition, we attempted to isolate influenza virus from 512 bronchial swabs taken from the autopsy lungs of hogs, but up to this time all the results have been negative.

The results obtained in our serological survey revealed that swine influenza virus, A/New Jersey/8/76-like strain, appeared among Japanese hogs in mid-1977 and seems to be spreading from herd to herd. Our observations have been confirmed by Dr. Shibata and his coworkers who were successful in the isolation of swine influenza strains closely

Fig. 1. Distribution of antibodies against A/New Jersey /8/76 and A/Victoria/3/75.

related to A/New Jersey/8/76 from hogs in Niigata Prefecture (personal communication from Dr. Shibata, Department of Bacteriology, Niigata University School of Medicine).

Also, it is apparent that the Hong Kong influenza virus coexists with this swine influenza virus at the same time at the same place. Under such a situation, genetic recombinations which result in the formation of new combination of envelope antigens (Hsw1N2 or H3N1) and the exchange of the internal proteins may occur in nature. Taking this into consideration, it may now be necessary to analyse, in detail, the antigens of swine-origin influenza viruses.

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Reference

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