

REPORTED OUTBREAKS OF SWINE INFLUENZA IN NORTHERN ITALY (1976-1981).
VIRUS ISOLATIONS AND ANATOMO-HISTOPATHOLOGICAL LESIONS OBSERVED IN
NATURALLY DISEASED ANIMALS.

L. SIDOLI * and F. GUARDA

ISTITUTO ZOOPROFILATTICO SPER. LE-SEZ. PARMA ISTITUTO ANATOMIA PATOLOGICA-TORINO

Without doubt influenza has constituted a chapter of great importance in swine pathology for the serious economic damage and for the Public Health aspects. The list of countries which have demonstrated the presence of this is continuously increasing (Diseases of swine, 1981). There is also the interest represented by the isolation of viruses considered of human origin which have been isolated from swines, the first of which was registered in 1969 at Taiwan during a human epidemic (Kundin W.D., 1970).

Swine influenza in Italy has constituted for years a serious economic and sanitary problem. The first virus strains A/NJ/8/76 (H1N1) were isolated in the Provinces of Parma, Reggio E. and Brescia (Nardelli and others, 1976). During the years following 1976, swine flu has assumed, in the Po Valley, an endemic aspect (Sidoli, 1980). The isolation of the various strains, which was intended to diagnose and survey the disease, was obtained during different seasons of the year, as shown in :

TABLE 1

Year	Winter		Summer		Autumn		
	Jan.	Feb.	Aug.	Sept.	Oct.	Nov.	Dec.
1976					**	+	*
1977							*
1978		*					*
1980		**	**				*
1981	**	**		*	**		*

* = H1N1 + = H3N2

Nineteen strains were typed as NJ/8/76; only one belonged to the H3N2 viruses. The typing of these strains was performed by the WHO Collaborating Center in Munich (West Germany). Since 1976, other than the classical characteristics, as described by Shope, the disease has assumed unusual clinical manifestations which may be related to those referred by Easterday e Couch (1975). The H3N2 -A/Swine Italy/1850/77, isolated on embryonated chicken eggs from the nasal swabs, tracheal and bronchial exudates of three dead pigs during a severe episode of respiratory disease which broke out in a breeding herd, was considered as not a laboratory contaminant and appears to be most closely related to A/England/42/72 from humans (Webster, 1981).

The highest mortality rates were always present in herds infected with Haemophilus pleuropneumoniae. Reproduction swines and teat feeding piglets were less involved on a percentage basis during the observed episodes.

Even though there were numerous episodes of disease there is, however, very little photographic documentation of specific macro and microscopic influenza lesions because of the presence of other pathogens in the lungs. Nonetheless, a few rigorously controlled cases resulting free of many important pathogens as Mycoplasma sp., Haemophilus sp., Pasteurella

sp., are thus described: the most evident macroscopic lesion is the distinct outline of the involved portion which are almost always of a wine-red color, and distributed erratically over all of the parenchyma; pulmonary edema; enlarged and slightly congested lymph glands which are terse when sliced. Exudate was never present in the pleural cavity. From a histopathologic viewpoint there are two types of lesions: the first is correlated to the destructive activity of the virus, the second is evidently caused by the activity of germs in the later phase.

In our opinion the lesions correlated with the activity of influenza viruses are the following:

- non purulent tracheitis with non purulent sub-epithelial infiltration around the vessels and glands. The epithelial layer during the first stages remains integral and afterwards becomes necrotic;
- the lungs contain areas of fibrinous alveolitis characterized by the presence of numerous neutrophil granulocytes, exfoliated alveolar cells and fibrin within the alveoli; there is the presence of mono-nuclear cell aggregations surrounding the small and medium bronchi and the small pulmonary arteries. The bronchial epithelium also presents slight phlogistic infiltrations. Such lesions seem to appear very early because they are the only ones present in very large portions of the lung. Edema and alveolar emphysema are frequently associated. The interstitial connective tissue is slightly infiltrated by mono-nuclear cells and is very edematous. In the most advanced cases, certain lobules are characterized by interstitial pneumonia with cell hyperplasia and fibrosis of interalveolar walls. A more or less evident hyperplasia of the lymph glands is also present.

Conclusions:

The isolation of an H3N2 virus obtained from swine afflicted with a severe respiratory syndrome suggests the need to intensify virological research in this way. Swine respiratory diseases in Italy seem to be greatly influenced by the circulation of Orthomyxoviruses. The description of the lesions in cases of influenza, demonstrated and proved by the isolation of a virus and the absence of pathogenic microorganisms, may contribute to a further explanation of this chapter of swine pathology.

Selected references: Easterday B.C., Couch R.E. J. of Inf. Dis., 1975, 131, n. 5, 602; DISEASES OF SWINE, 1981, 5a Ed.; Kundin W.D., Nature, 1970, 228 Nardelli L., Gualandi G., Carboni A., Cessi D., Cervio G., Sidoli L., Bagini C. Sel. Vet., 1976, 17, 689; Sidoli L., Praxis Vet., 1980, I; Webster R.G., Personal Communication, 1981.