

PLEUROPNEUMONIA-LIKE ORGANISMS ASSOCIATED WITH PNEUMONIA IN SWINE

By G. R. CARTER and J. D. SCHRODER*

In a recent report (1) evidence was brought forward to show that Glasser's disease of swine or infectious serositis is caused by a pleuro-pneumonia-like (PPLO) organism. Since completion of the foregoing report, PPLO have been recovered from the lungs of a number of pigs with pneumonia. It is felt that in addition to being the cause of infectious serositis, these organisms probably have a role in pneumonia in swine.

Recent work reviewed by Betts (2) has shown that there are two principal pneumonic diseases of the pig caused by viruses, viz. swine influenza and virus or enzootic pneumonia of pigs. It has been shown that the latter disease is widespread in the British Isles and Europe. It is Beveridge's (3) opinion that virus pneumonia is prevalent in the United States. The virus pneumonia described by Fulton and colleagues (4) in western Canada was doubtless enzootic pneumonia.

Hjarre and co-workers (5) were of the opinion that in the typical form of Glasser's disease there is no pneumonia but that lung changes are sometimes seen in the Glasser's syndrome. Pullar (6) described a pneumonic disease of swine in Australia which was unlike swine influenza. His descriptions of the disease suggest that he was dealing with enzootic pneumonia. Pericarditis, pleuritis and peritonitis were observed in a large number of the pigs examined. He considered the sero-fibrinous lesions associated with infectious pneumonia to be a disease distinct from Glasser's.

It is the authors' view that these various sero-fibrinous manifestations are in most instances produced by PPLO. The cultural methods described by Hjarre et al (5) and Sutherland and Simmons (7) for their "haemoglobino-philic bacteria" would probably support the growth of PPLO. Switzer (8) has shown that the habitat of this PPLO is the upper respiratory tract. In view of this it seems very likely that the portal of entry to the tissues and the systemic circulation is via the diseased lung. This could account for the large number of cases of serositis associated with pneumonia as noted by Pullar.

From a large number of pigs submitted for diagnosis during 1954, the authors selected for intensive examination a number displaying pneumonic lesions with and without fibrinous serositis. A large percentage of the pigs under two months of age with pneumonic lesions had pericarditis, pleuritis and peritonitis. A smaller percentage had a septic arthritis. Of 14 pigs under two months of age that yielded PPLO, six had pneumonia only and eight had pneumonia with extensive serositis. PPLO was recovered from all the lungs and lesions of serositis. In most of the cases examined, PPLO was the only organism recovered. The cultural methods were identical with those described previously (1).

*Ontario Veterinary College, Guelph, Ontario.

In order to determine whether or not PPLO was present in normal lungs, 23 swine lungs from a packing house were subjected to a cultural examination. PPLO was not recovered.

In regard to pathology, the amount of consolidation of the lung varied considerably. The character and extent of the gross changes resembled those given by Betts (9) for virus pneumonia. The apical and cardiac lobes were almost always affected.

The histopathology of the lungs from which the PPLO was recovered was essentially the same as that described by Hjarre and associates (10) for enzootic pneumonia. It also resembled closely the changes seen in the sections from virus pneumonia of pigs as described by the English workers. One histopathological feature considered by some to be characteristic of virus pneumonia, viz. lymphoid hyperplasia, was not outstanding in the sections of the lungs yielding PPLO.

The precise role of PPLO in pneumonia of swine is not known. Are they present in a primary or secondary capacity? In view of their filterability and fastidious growth requirements, it would seem quite probable that they may have been overlooked in some of the experiments on virus pneumonia of swine.

ACKNOWLEDGMENT

We are indebted to Alan O. Betts for supplying sections of lungs from pigs affected with virus pneumonia.

REFERENCES

1. CARTER, G. R. Observations on Pleuropneumonia-like Organisms Recovered from Swine with Atrophic Rhinitis and Glasser's Disease. *Can. J. Comp. Med.* 18: 246-251, 1954.
2. BETTS, A. O. Pneumonic Diseases of the Pig Caused by Viruses. *Brit. Vet. J.* 109: 99-106, 1953.
3. BEVERIDGE, W.I.B., and BETTS, A. O. Proc. XV International Veterinary Congress, Virus Pneumonia of Pigs, 1953.
4. FULTON, J.S., BURTON, A.N., and MILLAR, J.L. Virus Pneumonia of Swine. *J. Amer. Vet. Med. Assoc.* 123: 221-224, 1953.
5. HJARRE, A., BAKOS, K. and NORDBERG, B. K. Proc. XIV International Veterinary Congress. Experimental Investigation into Swine Influenza in Sweden with Special Regard to the Etiological Importance of Haemoglobinophilic Bacteria, 1949.
6. PULLAR, E. M. Infectious Pneumonia of Pigs II. Morbidity, Incidence, Type and Location of Lesions. *Aust. Vet. J.* 25: 53-60, 1949.
7. SUTHERLAND, A. K. and SIMMONS, G. C. Glasser's Disease of Swine. *Aust. Vet. J.* 23: 91-94, 1947.
8. SWITZER, W. P. Studies on Atrophic Rhinitis. *Proc. Amer. Vet. Med. Assoc.* pp. 102-106, 1954.
9. BETTS, A. O. Respiratory Diseases of Pigs V. Some Clinical and Epidemiological Aspects of Virus Pneumonia of Pigs. *Vet. Record.* 64: 283-288, 1952.
10. HJARRE, A., DINTER, Z. and BAKOS, K. Vergleichende Untersuchungen über eine influenzaähnliche Schweinekrankheit in Schweden und Shopes Schweineinfluenza. *Nord. Vet. Med.* 4: 1025-1045, 1952.