

PORCINE TOXOPLASMOSIS IN SINGAPORE

By V. Zaman and Mulkit Singh,
(Department of Parasitology, Faculty of Medicine, University of Singapore)

and

J. B. Spence and M. Chew,
(Primary Productions Department, Government of Singapore)

INTRODUCTION

Toxoplasmosis has been described in a wide range of animals from various parts of the world (Jacobs, 1963). *Toxoplasma gondii* is an unusual parasite as it shows very little host specificity and no mammal has been found to be completely resistant to it.

The epidemiology of Toxoplasmosis is not completely understood but it is generally believed that the human infection is acquired from animals. Surveys of animal populations for the parasite are therefore of considerable public health importance. The investigations described in this paper form part of such a survey.

MATERIALS AND METHODS

Sera were obtained from one hundred and thirty one locally bred pigs, from various parts of Singapore. These were tested for the presence of *Toxoplasma* antibodies using the indirect haemagglutination reaction (Jacobs and Lunde, 1957). This test is highly sensitive and has given satisfactory results in the hands of other workers (Lewis and Kessel, 1961). Moreover, it has certain advantages over the more widely used Sabin-Feldman dye test. In the haemagglutination test, unlike the dye test, live organisms are not employed and the "activator", which is a heat labile substance found in some human sera, is not required.

An isolation of the parasite is the only proof of infection. Five pigs were selected from one farm which had a high percentage of positive titres, brain tissue from these animals being obtained on slaughter.

The brains were transported to the laboratory in an ice-box and processed as follows:—

1. Squash preparations were made from different parts of the cortex and examined microscopically for the presence of cysts.
2. Impression smears from different parts of the brain were stained with Giemsa and also examined for cysts.

3. Tissues were digested in trypsin and also in a mixture of pepsin and Hydrochloric acid according to the method described by Walls, Taraska and Goldman (1963). The digested tissues were then injected intraperitoneally into mice.
4. The peritoneal contents of these mice were examined every alternate day for 10 days to observe for trophozoites, the proliferative form of the parasite.

RESULTS AND DISCUSSION

The results of the haemagglutination test showed that approximately 26% of pigs had antibodies, indicating possible exposure to the parasite sometime in their life. As the parasite can remain viable for a long time in the tissues it seemed very likely that some of these pigs would have live organisms potentially transmissible to man.

Amongst the five brains examined, two showed the presence of cysts in large numbers in squash preparations and on Giemsa-stained smears (Figs. 1 & 2). Cysts are demonstrated most conveniently in squash preparations in which they are easily differentiated from the normal brain tissue because of the sharp outline and darker colour. In Giemsa-stained preparations the parasite nuclei appear as dark bodies inside the cyst.

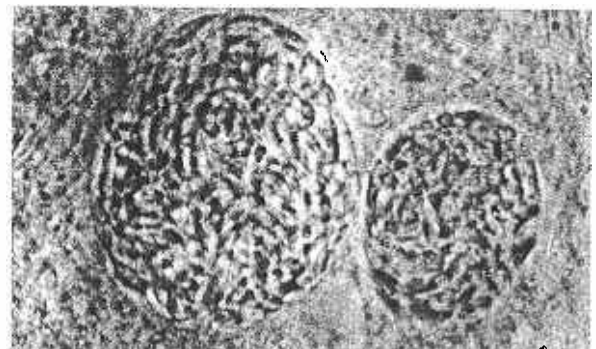


Fig. 1. A squash preparation of pig brain showing two large cysts filled with parasites. X 1000.

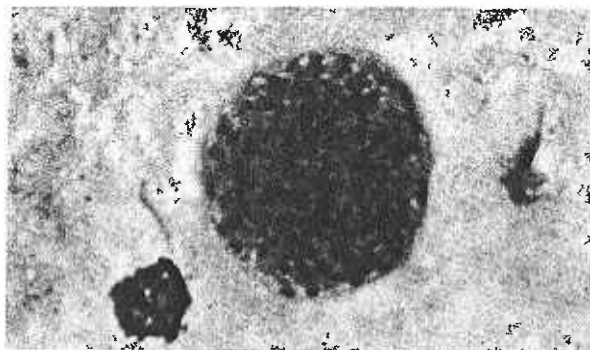


Fig. 2. An impression smear of pig brain after staining with Giemsa. The darkly staining bodies inside the cyst are parasite nuclei. X 1000.

Trophozoites were demonstrated in the peritoneal fluid of most of the experimental mice on the 6th day post inoculation. At this stage the parasite was easily recognised by its crescentic shape and large darkly staining nucleus. (Fig. 3).

The role of pigs in the transmission of disease to humans has been stressed previously by Weinman and Chandler (1959). They found a high incidence of *Toxoplasma* antibodies amongst people who had eaten improperly cooked pork. The present study shows that pigs in Singapore may act as a reservoir of *Toxoplasma*. However, the importance of this reservoir can only be assessed on completion of the project which also involves the examination of specimens from various other domestic animals.

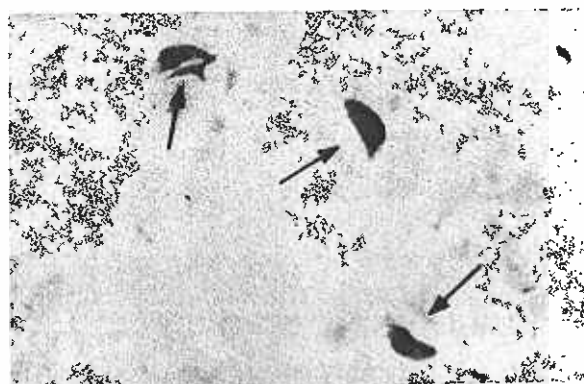


Fig. 3. A Giemsa stained smear of peritoneal fluid from a positive mouse showing trophozoites. X 1000.

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