CASE REPORT
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RABIES IN DOMESTIC PIG - FIRST REPORT FROM SOUTH INDIA

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ABSTRACT

Rabies is the most fatal zoonotic disease affecting all species of warm blooded animals. A rare case of rabies in domestic pig was reported in a pig farm at Nanniyode Panchayat of Thiruvananthapuram district, Kerala. Three pigs showed nervous symptoms 10 days after attack by a stray dog and died within 48 hours of onset of symptoms. Brain sample was collected from one of the pigs and subjected to laboratory examination. The sample proved positive for rabies by immunochromatographic assay and Fluorescent Antibody Test (FAT). This report describes the first case of rabies in domestic pig under farm condition in South India.

Keywords: Rabies, Pig, Fluorescent Antibody Test, first report

INTRODUCTION

Rabies is considered as the most dangerous viral disease caused by Lyssa virus belonging to family *Rhabdoviridae*. It is one of the oldest recognised diseases affecting humans and one of the most important zoonotic diseases in India. Dogs are the main reservoir hosts of rabies. Most animal bites in India (91.5%) are by dogs, of which about 60% are strays and 40% pets. The incidence of animal bites is 17.4 per 1000 population (Menezes, 2008). The reports on rabies in pigs are scanty (Jiang *et al*., 2008). It accounts for only 0.1-1.1 % of the incidence of animal rabies (Dhillon and Dhingra, 1973). A case of rabies in a domesticated pig confirmed by FAT is being reported.

CASE HISTORY AND OBSERVATIONS

On 27th July, 2017 a female Large White Yorkshire crossbred pig of 5 months age in a pig farm at Nanniyode Panchayat was brought to Veterinary Dispensary, Peringamala. The owner reported that the animal was showing nervous symptoms

since morning. It was also reported that one animal in the farm with 30 pigs died two days back showing similar symptoms and another one died the previous night. Symptoms included aggressiveness, inability to stand up and violent grunting. The owner had suffered from an injury in his hand while handling the aggressive pig too.

The owner also revealed a history of the pigs in the sty being attacked by a stray dog at night almost 10 days back. But no external wound could be noticed in any of the animals.

The ailing pig was paralytic and on lateral recumbency (Fig. 1). It showed hyperexcitation, rapid chewing, twitching of head, convulsions, excess salivation and change in vocalisation. The animal died within ten minutes of presenting at the dispensary.

Since the case history and symptoms were suggestive of rabies, the carcass was sent to State Institute for Animal Diseases (SIAD), Palode for investigation. Postmortem examination revealed no significant lesions. Brain sample was collected and impression smears subjected to Fluorescent Antibody Test (FAT). Immunochromatographic assay (Anigen, Republic of Korea) done with triturated hippocampus tissue was positive for rabies antigen. Impression smear of hippocampus was fixed overnight in chilled acetone (-20^{0}C). The fixed smear was dried and 20µl of anti-rabies nucleocapsid conjugate (BIO-RAD, France) was dropped over the smear. The smear was incubated with the conjugate at 37^{0}C in a moist chamber for 45 minutes, then washed with phosphate buffered saline (PBS), dried and observed under 20x objective of fluorescent microscope (OLYMPUS). Apple green fluorescent particles could be observed which could be graded as 2+ positive for rabies antigen as per the standard evaluation score by Veera Tepsumethanon *et al.* (1997) (Fig. 2). Thus, the case was confirmed as of rabies in domestic pig transmitted from dogs.

The next day, the pig farm was visited by an expert team and necessary preventive measures were advised. All the pigs in the farm were subjected to Post Exposure Vaccination (PEP) following ESSEN schedule. One ml of antirabies vaccine was given intramuscularly on day 0, 3, 7, 14 and 28. Also the persons handling the pigs were advised to start PEP vaccination under the direction of a physician. The animals were monitored for two months and no report on occurrence of the illness was reported after that.

Fig. 1. Pig affected with rabies in lateral recumbency

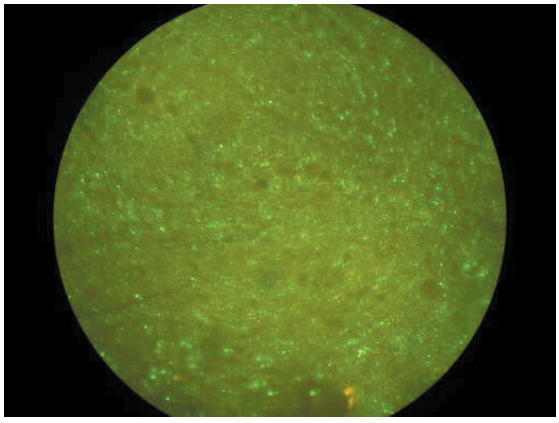

Fig. 2. FAT showing green fluorescence (20 x)

DISCUSSION

Reports on rabies in pigs are rare. (Jiang *et al*.. 2008, Osiyemi *et al.,* 1978, Tasiame *et al.,* 2016). Even though there are very few reports on rabies in wild pigs from India (Riju and Jayson, 2016), the only report from domestic pigs in the country, after perusal of available literature, was by Prabhu *et al.* (2018) which did not include documentation of epidemiological and clinical data on the case. This report can be considered as the first well documented report on rabies in domestic pigs from South India with epidemiological and clinical data on the case.

To prevent damage to crops in the forest fringe area by wild animals people in these area of Nandiyode Panchayat rear dogs which are let loose. These dogs are mostly unvaccinated and the venture into human dwelling and animal sheds without much fear in search of food. This increases the chance of spread of rabies through dog bite.

The mortality observed in this case was 12% in a herd of 25 pigs which is consistent with the findings of 13% mortality reported by Tasiame *et al.* (2016). The incubation period observed in this case was 10 days which is very short. All the three cases reported in the farm showed symptoms almost at same time with only 1 to 2 days gap and all the three died within hours of showing symptoms. The incubation period observed by Luangtongkum *et al.*, (1986) was 8-16 days and that by Jiang *et al.,* (2006) and Tasiame *et al*., (2016) were 20-30 days.

The clinical signs observed were in agreement with similar cases reported elsewhere (Luangtongkum *et al.*1986, Jiang *et al*. 2006 and Tasiame *et al.* 2016). The death of affected pigs within 1-3 days of the appearance of symptoms was similar to those described previously by other

workers (Jiang *et al.*, 2006 and Tasiame *et al.,* 2016).

The gold standard test for the diagnosis of rabies is the FAT. There are many reports on reliability of FAT for diagnosis of rabies (OIE manual, 2013). Though there are no approved parentral rabies vaccines for pigs, rabies vaccine off label was used to give PEP vaccination in unaffected pigs.

Compared to rabies in wild pig, this report of rabies in domesticated pig is of more significance because of its zoonotic implication since human beings are closely associated with farm animals. If the case was not successfully diagnosed and treatment initiated promptly the chances of contracting Rabies for the handlers especially of the injured owner (category III exposure) would have been high. As a consequence, in any pig case with neurological signs rabies is an alternative diagnostic, and there is the possibility of human transmission. Adequate preventive and control measures should be adopted in any case of exposure to rabies; not only in canines but also in other species like pigs.

This report describes a documented case of rabies in domesticated pig in India, wherein there was category I and category III human exposure and 12%mortality and 100% case fatality rate.

SUMMARY

A rare case of rabies in domesticated pig and its successful diagnosis and control is reported.

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