

PORCINE CIRCOVIRUS - 2 AN EMERGING DISEASE OF CROSSBRED PIGS IN TAMIL NADU, INDIA

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Abstract: A crossbred private pig farm was maintained at poosaripalayam village of Tirupur district, Tamil Nadu, India and reported with the history of reproductive failure and increased mortality rate in neonates. Stillbirth and neonatal mortality rates were 20.00% and 88.46% respectively. During postmortem investigation, samples were collected from piglets and subjected to polymerase chain reaction (PCR) for swine fever, brucellosis and PCV 2. None of the samples were positive for swine fever and brucellosis. Porcine circovirus 2 was confirmed in pooled organ samples by PCR. Histopathological revealed the presence of reticular cell hyperplasia in spleen, necrotic enteritis, nephrosis and toxic hepatitis. Present study suggests that PCV2 is an emerging viral pathogen which causes for reproductive failure in swine farming but not recognized so far in India and warrants detailed epidemiology study to trace back the source of infection.

Keywords: Cross bred pigs, Porcine circovirus 2, Polymerase Chain Reaction.

Introduction

Porcine circovirus 2 (PCV 2), a newly recognized virus, has been associated with late-term abortions, stillbirths, and nonviable neonatal piglets (West *et al.*, 1999, O'Connor *et al.*, 2001). Therefore, this investigation was planned to ascertain reproductive failures and neonatal mortality caused by PCV2 by detection of viral antigen and nucleic acids in tissues of stillborn and dead neonatal pigs in Tamil Nadu.

Materials and Methods

A private crossbred pig farm at poosaripalayam village of Tirupur district, Tamil Nadu, India was selected for this study. Three months after the inception of the farm, a total of 65 litters born from first-parity in 8 Large White Yorkshire gilts. Still birth and neonatal mortality rates were recorded and analyzed. A detailed necropsy examination was conducted in piglets and tissue samples were collected and preserved in 10% buffered formalin and ice till further processing. Approximately 25 mg of pooled tissue sample was subjected to polymerase chain

reaction targeting the VP2 gene for detecting of PCV 2 as described by Larochelle *et al.* (1999). Tissue samples were also subjected to RT-PCR for diagnosis of swine fever and brucellosis. Samples reserved in buffered formalin were subjected to histopathological examinations as per standard procedures.

Results

Sixty five piglets were farrowed from 8 gilts with an average litter size was 8.12 %. Among that, 13 (20%) were stillbirth and 52 (80%) live - born piglets. Among the 52 born alive, 46 were died within 6 days of birth with a neonatal mortality rate of 88.46%. Gilts were showed recumbent for one day to one month after farrowing. The survived 6 female piglets were belonged to same litter and all were kept up to their sexual maturity and showed uneven growth pattern. Two of them were farrowed with a litter size of six.

All the samples from dead piglets showed negative to swine fever and brucellosis by RT-PCR. Pooled organ samples from dead piglets gave positive for Porcine circo virus 2 by PCR. Macroscopic examination of the abdominal cavity revealed the presence of straw-colored fluid. Histopathological examination revealed the presence of diffuse lymphoid cell depletion around periarteriolar sheath of white pulp with moderate reticular cell hyperplasia in spleen. Diffuse severe necrotizing enteritis, diffuse cloudy swelling of renal tubular epithelial cells and diffuse severe vacuolar degenerative changes in hepatocytes were also observed.

Discussion

Present study revealed the presence of decreased litter size, increased number of stillbirths, mummified fetuses, uneven growth of survived litter size and neonatal deaths which are the characteristic feature of Porcine circo virus 2 as said by Joaquim (2012). Furthermore, PCV2 infection was confirmed by PCR, targeting the VP2 gene of PCV2. Histopathological findings were also suggestive of PCV 2. PCV2 associated reproductive failure has been recorded in Canada, Italy, Germany (West *et al.*, 1999; O'Connor *et al.*, 2001), and in India (Rinku and Saikumar, 2010). Porcine circo virus 2 infection can also be transmitted vertically (Harms *et al.*, 1999; Jolie *et al.*, 2000) by infected boars (Schmoll *et al.*, 2008). The reproductive failure in this farm could possibly be due to use of boars infected with PCV2, as the farm did not practice artificial insemination. The results of this study suggests that PCV2, an emerging viral pathogen which causes for reproductive failure in swine farming but not recognized so far in India. The situation warrants further studies to determine the epidemiology of these viruses to reproductive failure among Indian cross bred pigs.

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