INCIDENCE OF MORTALITY AMONG SWINE DUE TO CLASSICAL SWINE FEVER- POSTMORTEM FINDINGS

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ABSTRACT

Mortality reported due to classical swine fever among pigs at Livestock Research Station, Kattupakkam, maintained under modern barns with concrete floors and located in the semi-arid tropical region have been analysed. Two (3.9%) out of 57 pigs died due to classical swine fever between May 2008 to April 2009. The other cause specific deaths amongst these pigs were due to acute enteritis, acute pneumonia, interstitial pneumonia, tubular nephritis and crushing. Clinical signs included erythema of the skin of the ears, abdomen and medial thighs and greenish diarrhea. Postmortem lesions like enlarged and button shape ulcers in the intestines, multifocal hemorrhages of the spleen and petechial hemorrhages on the kidney and infiltration of mononuclear cells in the mucosa and sub mucosa formed necrotic areas of the intestine, infarcts and shrinkage of glomerular tufts were the significant pathognomonic lesions of CSF.

Key words : Swine, Classical swine fever, Pestivirus, Button shaped ulcers, Infracts.

INTRODUCTION

Classical swine fever (CSF) is responsible for considerable economic losses in pig industry. CSF, caused by a virus, member of the genus Pestivirus of the family Flaviviridae, affects pigs of all age groups. It is a devastating disease associated with high morbidity and mortality associated with mummification of fetuses and abortions (Van Oirschot, 1999). The disease is world wide in distribution and has been reported frequently from various parts of India (Saini et al., 2000; Bhattacharya, 2001 and Barman et al., 2003). Kumar et al. (2007) reported 88.2% of morbidity, 77.5% of mortality and 87.8% of case fatality caused by classical swine fever in pigs less than 3 months of age. The present study analysed the mortality due to CSF based on gross postmortem findings and histological examination in pigs at this station under report.

MATERIALS AND METHODS

Five hundred and seventy six pigs of various genetic groups viz. Durac (16), Landrace (26), LargeWhite Yorkshire (157), LargeWhite Yorkshire X Landrace (41), LargeWhite Yorkshire X Landrace X Durac (157) and LWY 75% cross (179) were maintained at Livestock Research Station, Kattupakkam under modern barns with concrete floors. The pigs were vaccinated annually with FMD and CSF. There was no movement of labourer from pig breeding unit to other section in this farm, but pigs were purchased from other states for breeding purpose. A detailed description of animals were recorded with history of anorxia, staggering gait, greenish diarrhea with erythemic skin lesion in the ears and abdomen cyanoses and a few animals showing laboured respiration, lateral recumbency with high fever, later succumbed to death.

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Postmortem examination of dead animals was carried out to find out the cause of death. A total of 57 pigs died and postmortem examination was conducted during the period from May-2008 to April-2009. The animals that died in the pig breeding unit were subjected to a full postmortem examination and tissues of lung, liver, spleen, kidney, lymph node and intestine were collected in 10% buffered formalin for routine histological examination. Samples were submitted to the Central University Laboratory (CUL), TANUVAS, Madhavaram Milk Colony, Chennai for identification of the cause of death.

RESULTS AND DISCUSSION

Though regular vaccination and application of suitable anthelmintic drenching had been a routine management practice in this farm, parasitic deaths and other viral infection were not uncommon. Two (3.9%) out of 57 deaths of pigs (3 months old) confirmed to be due to classical swine fever (Fig 1) was well corroborated with the results of Kumar et al. (2007) who reported that 90 to 100% mortality rate in pigs under 3 months of age than in older pigs (50%). Concurrent with the reported data of Shankar et al. (2009), the present study also revealed that other causes of mortality among pigs were acute enteritis, acute pneumonia, interstitial pneumonia, tubular nephritis and crushing. The young pigs are highly susceptible to CSF and other infection. The reason for mortality caused by CSF in two pigs was probably because of immature immune system at the time of vaccination and/or contracted the infectious agent before vaccination. The spleen and liver showed severely congested, enlarged and dark red with pale infracts and kidneys were edematous, congested and with echymatic hemorrhages (Fig 2 and 3). Button ulcers, a characteristic lesion of CSF on the mucosal surface of the large intestine i.e. small circular necrotic areas (0.5 to 4.5cm diameter) with raised edges and depressed centers were also observed (Fig 5 and 5a). The outer surface of the large intestine showed numerous nodules spread over their surfaces inside of the lumen (Fig 4). The present findings concurred
FIG 4: Outer surface of the large intestine showing numerous nodules spread over its surface inside of the lumen of pig-affected with CSF.

FIG 5: Small circular necrotic areas with raised edges and depressed centres in intestine of pig-affected with CSF.

with the reported data of Bhattacharya (2001), Vegad and Katiyar (2001) and Barman et al. (2003).

Microscopic examination of the intestine showed sloughed mucosal epithelium in some areas. A heavy infiltration of mononuclear cells in the mucosa and sub mucosa formed necrotic areas which is consistent with the reports of Choi and Chae (2003). Infracts and shrinkage of glomerular tufts, diffuse hemorrhages and mononuclear leukocytes observed in kidney, spleen and liver in these outbreaks have also been reported by other workers (Van Oirschot, 1999; Sain et al., 2000; Barman et al., 2003 and Kumar et al., 2007).

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FIG 5A: Button ulcers on the mucosal surface of the large intestine i.e. small circular necrotic areas (0.5 to 4.5cm diameter) with raised edges and depressed centers in pig-affected with CSF.