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Baswaraj Nitture
Senior Veterinary Officer, Department of AH&VS, Government of Karnataka, Karnataka, India

Vijay Kumar
Ph.D. Scholar, Department of Veterinary Surgery and Radiology, Veterinary College Bidar, Karnataka, India

Mallikarjun
Ph.D. Scholar, Department of Veterinary Surgery and Radiology, Veterinary College Bidar, Karnataka, India

Gurunath Pasare
Assistant Professor, Department of LFC, Veterinary College Bidar, KVAFSU Bidar Karnataka, India

Shivamurthy Vakare
Regional Research Officer, Animal Disease Diagnostic Laboratory and Information Centre, IAH & VB, Bidar, Karnataka, India

Ambika
Senior Veterinary Officer, Department of AH&VS, Government of Karnataka, Karnataka, India

Corresponding Author:
Baswaraj Nitture
Senior Veterinary Officer, Department of AH&VS, Government of Karnataka, Karnataka, India

Molecular diagnosis of classical swine fever in Yorkshire cross breed pigs in a semi intensive farm and its control

Baswaraj Nitture, Vijay Kumar, Mallikarjun, Gurunath Pasare, Shivamurthy Vakare and Ambika

Abstract
A piggery unit housing 105 adult Yorkshire cross animals in Bidar district encountered over 37.14% (39 out of 105) mortality in one week. Thorough disease investigation revealed ailing animals as well as, an ongoing mortality. The clinical signs observed in the affected animals were, high fever, anorexia, depression, constipation followed by diarrohea, purple discoloration of skin and ear pinna. Few ailing animals exhibited nervous signs like circling, tremors, in co-ordination and abnormal gait. Upon post-mortem examination of affected animals predominantly revealed wide spread subcutaneous ecchymosis hemorrhages, enlarged lymph nodes, enlargement and infarctions of spleen, ulcers in colon resembling 'button like' were observed. The lung tissue was highly congested and hemorrhagic. Pinpoint hemorrhages over the kidney surface resembled "turkey egg". The whole blood in EDTA from ailing animals and tissue samples viz., lymph node, spleen, kidney, bladder and large intestine loop collected during the post-mortem were submitted to the SRDDL/IAH&VB laboratory for agent identification and disease confirmation. RNA extraction was carried out from the blood and tissue samples for molecular diagnosis and confirmation of the disease. Polymerase chain reaction was performed with a pair of specific primers targeting conserved region of the classical swine fever virus. PCR results yielded an amplicon size of 421 bp confirming the samples as positive for CSF virus. Based on the confirmatory results, the piggery farmer was advised to take appropriate measures to curtail the disease by culling all ailing pigs, disinfection of farm premises using Vircon-S® and recommended CSF vaccination @ 1ml I/M (IAH&VB, Bengaluru) in apparently healthy animals.

Keywords: Classical swine fever, Yorkshire, PCR, Bidar, pig

Introduction
Classical swine fever aka "Hog Cholera" is highly contagious, fatal and economically important disease of domestic pigs and wild boars affecting all age group, leading to complete loss and closure of piggery units. It is caused by CSF Virus (RNA) of Genus Pestivirus and Family Flaviviridae. CSF is OIE listed disease (List A) and hence outbreaks are to be notified immediately. CSF is one of the top five viral diseases of livestock in India.

Materials and Method/ History
A progressive piggery farmer from Bidar city of Karnataka state, had started rearing 105 Yorkshire cross pigs in a semi intensive way. Soon farmer started observing pigs were suffering from high body temperature, not taking feed and water, dullness, shivering and purple discoloration of skin and ear pinna in all the affected pigs. Out of 105 pigs, 39 had died during the course of disease. The cumulative mortality was 37.14%. On day of farm visit 4 pigs were ailing and 3 had died.
The whole bloods in EDTA and serum samples were collected from ailing pigs. And during postmortem tissue samples viz. spleen, intestine, blood and lymph node were collected for RNA extraction.

Result and Discussion
In ailing pigs increased rectal temperature of 104.5 F to 105.8 F was noted, anorexia, depression, weakness of hind quarters and constipation followed by diarrohea. Some pigs showed nervous signs like abnormal gait, tremors and in coordination.
On post-mortem examination of affected animals predominantly revealed wide spread subcutaneous ecchymosis hemorrhages, enlarged lymph nodes, enlargement and infarctions of

spleen, ulcers in colon resembling 'button like' were observed. The lung tissue was highly congested and hemorrhagic. Pinpoint hemorrhages over the kidney surface resembled "turkey egg".

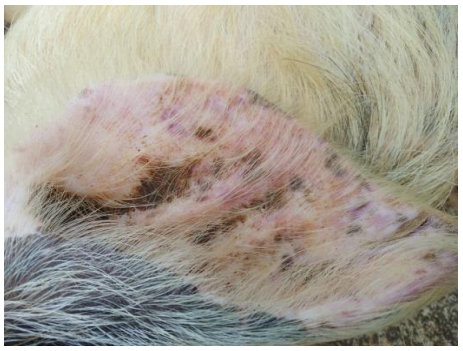
RNA extraction was carried out and Polymerase Chain Reaction (PCR) was performed targeting ntr gene of classical swine fever (CSF) virus. PCR test yielded an amplicon of 421 base pairs, confirming the samples as positive for CSF virus. Hematology revealed marked lymphocytopenia.

Based on the laboratory confirmatory results, the piggery farmer was advised to take appropriate measures to curtail the disease by culling all ailing pigs, disinfection of farm premises using Vircon-S® and recommended CSF vaccination @ 1ml I/M (IAH&VB, Bengaluru) in apparently healthy animals.

Semi intensive piggery unit

Weakness of hind quarters

Cyanosis of lateral aspect of ear pinna



Cyanosis of medial aspect of ear pinna

Cynosis from ventral aspect of thorax extending up to neck region

Petechial haemorrhages on buttock and hind limb

Ecchymotic haemorrhages on Peritoneum wall, intestine and peritoneal sub- cutaneous fat

Ecchymotic haemorrhages on Peritoneum wall, intestine and peritoneal sub- cutaneous fat

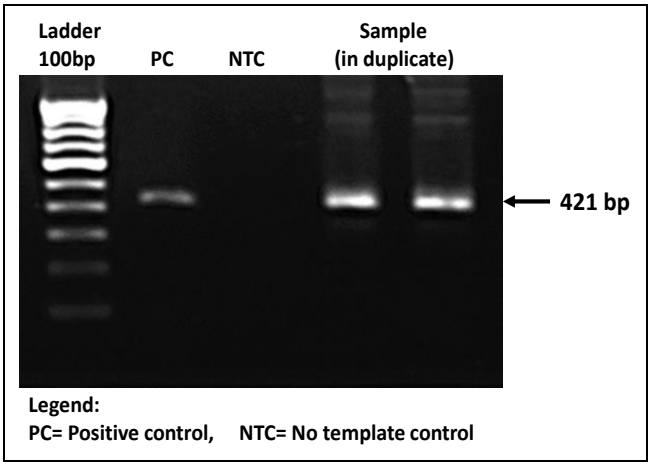
Necrosis & enlargement of spleen and infarcts on margin of spleen

Swollen and hemorrhagic Lymph Node

"Turkey egg" appearance of Kidney

Petechial haemorrhages in Urinary Bladder

"Button Shaped" Shaped Ulcers in Colon



PCR confirmation of CSF-Virus

Conclusion

Classical swine fever is highly contagious, fatal and economically important disease in piggery farming. Hence early diagnosis and immediate control measures are needed to control the spread of disease. Good animal husbandry practice and vaccination will greatly reduce the losses.

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