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Incidence of classical swine fever in local domestic pigs of Bidar district of Northern Karnataka

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Abstract

Several cause factors affecting the pig population in India the infectious diseases are major one which are difficult to control in pig population. Pig population is affected by Classical swine fever (CSF) is one of the most life threatening viral diseases of domestic pigs and wild boar. Classical swine fever virus (CSFV), a member of the Pestivirus genus within the Flaviviridae family, is a highly contagious and very often fatal infection in pigs, which contributes to severe economic loss in pig farming. Though the several guidelines are recommended from the different state governments in order to mitigate the outbreaks, CSF remained underestimated and neglected for decades in India. In this aspect our country requires rapid and sensitive diagnostic tests for an early detection of infection to limit the spread of the disease. In the present study reported the outbreak of the CSF in the local domestic pigs in the Bidar district of Northern Karnataka, the affected animals were totally restless and there was conjunctivitis, very high body temperature, complete anorexia, cough and abnormal swaying movements, Pigs were huddled together in the corner of the house, exhibited labored breathing, staggering gait or swaying movement of the hindquarters and erythematous lesions in the abdominal region, ears and in the medial side of the legs, Conjunctivitis, thick ocular discharge and watery nasal discharge were also observed, followed by the sudden death of the animals were noticed. There was about 20-30 animals were dead over a period of 15 days with typical clinical symptoms every day one or two animal death were reported. Clinical samples like kidneys, lymph nodes, intestine, spleen, brain, heart, liver and lungs were collected and sent to South Regional Disease Diagnostic Laboratory (SRDDL) Institute of Animal Health and Veterinary Biologicals (IAH&VB) for the further analysis to find out the root cause by using molecular techniques. The outcome of the current study concludes that CSF viral strains circulating in the Bidar region of Karnataka are highly virulent, further the disease can be diagnosed specifically using molecular technique like RT-PCR and Post-mortem examination and clinical symptoms.

Keywords: Classical swine fever virus, domestic pigs, reverse transcription polymerase chain reaction, Post mortem examination, and molecular detection

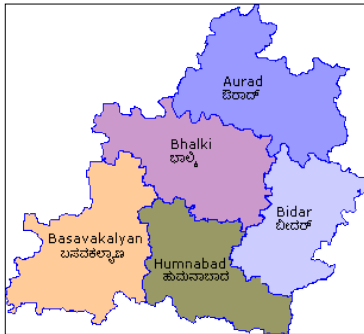
Introduction

Total Pig Population in the country is 9.06 Million during 2019 livestock censuses, Total Pig Population has decreased by 12.0% over previous Livestock Census (2012) the decreased pig population is one of the major hurdle for the farming community in rural economic growth. Among the several cause factors affecting the pig population the infectious diseases are major. Pig population is affected by Classical swine fever (CSF) is one of the most life threatening viral diseases of domestic pigs and wild boar. Classical swine fever virus (CSFV), a member of the Pestivirus genus within the Flaviviridae family (Meyers *et al.* 1989) [3], is a highly contagious and very often fatal infection in pigs, which contributes to severe economic loss in pig farming (Postel *et al.* 2012) [5] by constraining pig production and pig products for the commercial purposes. the important clinical symptoms includes the high fever, complete anorexia, cough and abnormal swaying movements, further may leads to mortality, stunted growth, poor reproductive performance. CSF remains a threat to pigs raised in South Asia, including India, Nepal and Bhutan (Dukpa *et al.* 2011) [1]. In India, CSF outbreaks are reported from most of the states wherever pig rearing is practiced and more frequently from northeast states where the piggery industry is growing. Though the several guidelines are recommended from the different state governments in order to mitigate the outbreaks, CSF remained underestimated and neglected for decades in India. In this aspect our country requires rapid and sensitive diagnostic tests for an early detection of infection to limit the spread of the disease. Also, effective prophylactics are required to help in control and eradication of the disease for the development of the piggery industry.

In the present study reported the outbreak of the CSF in the local domestic pigs in the Bidar district of Northern Karnataka.

Materials and Method

The study area includes the Nandagaon bidar taluk Bidar District of Karnatak. Where the outbreak of CSF in the local swine population occurred. Geographical location of the study area 17.91229179396574, 77.4761785271834.



The outbreak occurred in the local swine population of about 200 animals of different age group, where they were maintained on free range system of rearing in which the affected animals were totally restless and there was conjunctivitis, very high body temperature, complete anorexia, cough and abnormal swaying movements, Pigs were huddled together in the corner of the house, exhibited labored breathing, staggering gait or swaying movement of the hindquarters and erythematous lesions in the abdominal region, ears and in the medial side of the legs, Conjunctivitis, thick ocular discharge and watery nasal discharge were also observed, followed by the sudden death of the animals were noticed. There was about 20-30 animals were dead over a period of 15 days with typical clinical symptoms every day one or two animal death were reported. Looking at the Clinical symptoms and its system of rearing the post-mortem study was conducted on 5 representative dead animals in order to find the root cause of the animal death. Clinical samples like kidneys, lymph nodes, intestine, spleen, brain, heart, liver and lungs were collected and sent to South Regional Disease Diagnostic Laboratory (SRDDL) Institute of Animal Health and Veterinary Biologicals (IAH&VB) for the further analysis to find out the root cause by using molecular techniques.

Results and Discussion

Post-mortem examination



Fig 1: Post mortem examination of the pigs at field level affected with CSF.

The affected pigs were showing the typical symptoms like multiple petechiation or purple discoloration of the skin in the abdominal region, ears and in the medial side of legs. Opening of the carcasses revealed subcutaneous ecchymotic hemorrhages. All the superficial lymph nodes were swollen, edematous, hemorrhagic and dark tan colored in appearance. Which is also similar to the findings in the post-mortem examination reported by Malswamkima D *et al.*, 2015 ^[2] in the CSF in Mizoram. In addition the results reported in the current study are also in similar to the findings of Shamim Sarkar *et al.*, 2018 ^[8] reported CSF in Bangladesh.



Fig 2: Swine lungs showing severe congestion and haemorrhages patches with the clotted blood inside the lungs.

In the current study found that there is Non collapsing, hemorrhagic lungs with pneumonic areas and also filled with clotted blood which is also in accordance with the reports of (Malswamkima D *et al.*, 2015) ^[2]. In addition the results reported in the current study are also in similar to the findings of Shamim Sarkar *et al.*, 2018 ^[8] reported CSF in Bangladesh. Further the sudden death of the affected pigs are mainly attribute to the severe anoxia and coma due to the clotted blood in the lungs and non collapsible lung which could not supply the sufficient amount of oxygenation of the blood.



Fig 3: Swine liver and spleen showing severe haemorrhages patches.

In the current study upon Postmortem examination it is revealed that the liver appears to be dark with severe congestion and enlarged spleen. However the findings of the Malswamkima D *et al.*, 2015 ^[2] in the pigs affected with CSF in Mizoram is also reported the dark coloured liver, enlarged and congested, typical infarction in the spleen was also observed. The spleen was enlarged and congested with small raised hemorrhagic areas. Suggesting the current study the pigs were affected with CSF. In addition the results reported in the current study are also in similar to the findings of Shamim Sarkar *et al.*, 2018 ^[8] reported CSF in Bangladesh.

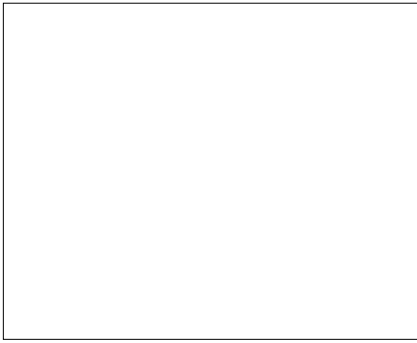


Fig 4: Swine spleen showing petechial haemorrhages patches.

In the current study the Kidney showed the haemorrhages patches and congestion. However similar findings of kidney in the CSF affected pigs with Pinpoint or petechial hemorrhages in the sub capsular region of the kidneys resembling ‘Turkey egg kidney’ were also observed. Cross section of kidneys revealed severe congestion in the cortico-medullary junction were also been reported earlier by Malswamkima D *et al.*, 2015 [2]. Post mortem lesions of the dead pigs also indicated an acute form of CSF primarily due to severe vascular alterations in various organs leading to hemorrhagic diathesis, which produces hemorrhages in kidney, lymph nodes, skin, mucous and serous membranes, as well as spleen infarctions (Rahman T *et al.*, 2001) [6]. Our results are also in corroboration with other reports like Rajkhowa T.K *et al.*, 2013 [7].

Molecular detection of CSFV

The collected representative tissues samples (Pig/1.5yrs/female and Pig/3months/female) were processed for RNA extraction and conducted Reverse transcription polymerase chain reaction (RT-PCR) at SRDDL-IAH& VB to detect the specific gene fragments of classical swine fever virus (CSFV). Further the results of the RT-PCR revealed that there is presence of the CSF virus in the clinical samples confirming the cause of the death in the pig population is due to the CSF. The 5’NTR nucleotide sequence is highly conserved among all members within the genus Pestivirus, thus it is very useful for the characterization of species or genotype (Patil S.S *et al.* 2012) [4].

Conclusion

The CSF viral strains circulating in the Bidar region of Karnataka are highly virulent, further the disease can be diagnosed specifically using molecular technique like RT-PCR and Post-mortem examination and clinical symptoms.

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References

1. Dukpa K, Robertson ID, Ellis TM. The seroprevalence of foot-and-mouth disease in the sedentary livestock herds in four districts of Bhutan. *Preventive Veterinary Medicine.* 2011;100:231-236.
2. Malswamkima D, Rajkhowa TK, Chandra R, Dutta TK. Pathology and molecular diagnosis of classical swine fever in Mizoram. *Veterinary World.* 2015 Jan;8(1):76-

81. PMID: 27047001; PMCID: PMC4777816.

3. Meyers G, Rumenapf T, Thiel HJ. Molecular cloning and nucleotide sequence of the genome of hog cholera virus. *Virology.* 1989;171:555-567.
4. Patil SS, Hemadri D, Veeresh H, Sreekala K, Gajendragad MR, Prabhudas K. Phylogenetic analysis of NS5B gene of classical swine fever virus isolates indicates plausible Chinese origin of Indian subgroup 2.2 viruses. *Virus Genes.* 2012;44(1):104-108.
5. Postel A, Moennig V, Becher P. Classical swine fever in Europe—the current situation. *Berliner und Munchener tierarztliche Wochenschrift.* 2012;126:468-475.
6. Rahman T, Sarma DK, Baruah GK, Chakraborty A, Pathak DC, Goswami S, *et al.* Pathology of atypical form of swine fever. *Indian J Vet. Pathol.* 2001;25:5-7.
7. Rajkhowa TK, Hauhna L. Jamlianthang Studies on clinico- pathology and diagnosis of CSF in Zovawk pigs: an indigenous pig of Mizoram, India. *Indian J Anim. Sci.* 2013;83(6):620-624.
8. Shamim Sarkar, Mohammad Enayet Hossain, Emily S Gurley, Rashedul Hasan, Mohammed Z Rahman. An outbreak of classical swine fever in pigs in Bangladesh, *Veterinary Medicine and Science.* 2018;4:45-52.