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Outbreak of African Swine Fever in Government Pig Farm at Ranchi, Jharkhand

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ABSTRACT

An atypical form of African swine fever was recorded in pigs of Government pig farm at Ranchi Jharkhand. In this outbreak a total of 1240 pigs died within 30 days. Upon laboratory examination the disease was confirmed to be African swine fever.Immediately rest of the pigs were isolated and biosecurity measures were ensured. The present case report deals with the outbreak of African swine fever virus in a Government Pig Farm at Kanke, Ranchi (Jharkhand) with 95.3% mortality in pigs.

Key words: African swine fever, Pig.

Viral diseases affecting pigs are a major concern of mortality causing huge loss to the pig farmers. One such disease is African swine fever (ASF) that has already knocked in various states of India including Assam, Arunachal Pradesh and Jharkhand. ASF is a highly contagious devastating disease of pigs and wild boars causing 100% mortality. The causative agent African swine fever virus (ASFV) is a large, double stranded DNA virus belongs to the genus Asfivirus, family Asfarviridae. Pig is the only species affected by this virus. Soft ticks (Ornithodoros genus) are shown to be reservoir and transmission vectors of ASFV (Denyer and Wilkinson, 1998). Transmission is very rapid and quickly engulfs the entire pig population. Infected and in contact pigs should be culled immediately and buried deep and sheds and premises be disinfected to control the disease. African swine fever virus used to occur primarily in Africa. In India, African swine fever virus cases were notified in Arunachal Pradesh during November-December 2019. In year 2021 Nagaland, Mizoram and Assam states got hit by ASFV. In view of this the present paper reports an atypical form of African swine fever outbreak among pigs of government pig farm Jharkhand.

Case history and clinical observation

In July 2022, incidence of pig mortality was reported from many district of Jharkhand and the government owned pig farm at Kanke, Ranchi was severely affected. A team from IAHP (Institute of Animal Health and Production, Kanke, Ranchi) was sent to investigate the cause of death. Later on subject experts from College of Veterinary science and Animal Husbandry, Kanke, Ranchi also joined in investigation. Post-mortem examination (Fig 1 and 3) was carried out and samples (Blood smear, ear pinna, nasal swab, anal discharge swab, liver and lung sample) were sent to NIHSAD-Bhopal and RDDL-Kolkata.

The clinical symptoms of ASFV infection are very similar to classical swine fever and the two diseases normally have to be distinguished by laboratory diagnosis .This diagnosis is usually performed by an ELISA, real time PCR or isolation of the virus from either the blood, lymph nodes, spleen, or serum of an infected pig. Confirmation of ASFV with advisory was issued by NIHSAD Bhopal in the month of August 2022 (Table 1). All four nasal swab sample, three rectal swab sample, one out of two clotted blood and two tissues of vital organs (liver and kidney) of Tamworth and Desi breed pigs were positive in Real time PCR. Control room for ASF was initiated at state level. Infected zone, surveillance zone and free zone were identified. All District Animal Husbandry Officers were directed to start surveillance and ensure all biosecurity measures (Fig 2) as per National Action Plan. Biosecurity measures are essentialfor prevention and control of African Swine fever. Disinfection procedures are an important asset of the mitigation phase. It was decided to enhance awareness among distributors, butcher and private vets about the economic impact and biosecurity measures of ASF. In addition if visitors enter the pig area they should follow biosecurity measures for footwear and clothing (Penrith and Vosloo 2009). On a social network spreading awareness of a contagious disease not only lower the incidence of that disease, but in some cases can even prevent that disease from growing into an epidemic.In this outbreak of ASFV at Government Pig farm, a mortality percentage of 95.3 was noticed. The farm was almost wiped off, with 1240 pigs died out of 1300 stock in various age group.

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Table 1: Result showing laboratory findings of samples collected by IAHP Ranchi from Government pig farm Ranchi.

Name of animal	Breed	Name of sample (No of sample)	Laboratory findings of NIHSAD Bhopal (Real time PCR)
Pig	T and D	Nasal swab (4)	Positive (4)
Pig	T and D	Rectal swab (3)	Positive (3)
Pig	T and D	Clotted blood (2)	Positive (1)
Pig	T and D	Tissues (2)	Positive (2)

Fig 1: Sample collection from dead pig.

Fig 2: Team with protective kit.

Fig 3: Sample collection from dead piglets.

The investigation revealed that the disease was characterized by sudden death and before that the affected animals appeared dull depressed sudden stoppage of feed uptake, rapid respiration and vomiting. After rapid respiration the pigs fell down and succumbed to death within an hour. Based on the clinical signs observed the outbreak was suspected to be African swine fever. Real time PCR has been widely used for the diagnosis of African swine fever due to its sensitivity, specificity and rapid turnaround time. Many scientists have conducted research on this topic and there are multiple research papers available that discuss various aspects of ASF diagnosis using real time PCR (Tignon *et al.,* 2011).

Due to lack of effective vaccination, control of ASF has become a major challenge for state Animal Husbandry Department. The outbreak has inflicted major economic blow to the pig industry of Jharkhand. The demographic location of the vectors such as ticks and flies should be taken into account while mapping control measures. The changing climatic and habitat patterns on the distribution of the vectors also needs to be stressed on. Its urgent need of the hour to implement strict biosecurity measures since without human assistance ASF virus cannot be transmitted over long distance.

African swine fever is a highly contagious viral disease that affects domestic and wild pigs. It has significant economic implications for the swine industry due to its high mortality rates and trade restrictions imposed on affected regions. The disease poses a threat to food security and has led to the culling of millions of pigs in efforts to control its spread. Preventative measures such as biosecurity protocols, surveillance and vaccination are crucial in managing the disease. International cooperation and coordination are essential to prevent the further spread of African swine fever and protect global pig populations. Continued research and awareness are key in combating this ongoing challenge in the swine industry.

CONCLUSION

African swine fever (ASF) control policies typically involve a combination of measures aimed at preventing the introduction and spread of the virus in pig populations. Implementing strict controls on the movement of pigs and pig products to prevent the spread of ASF from infected areas to unaffected regions. Enforcing biosecurity protocols on pig farms to minimize the risk of ASF introduction, such as restricting farm access, disinfecting vehicles and equipment, and controlling wildlife contact with pigs. Establishing surveillance systems to detect ASF outbreaks early, allowing for rapid response and containment measures. In the event of an ASF outbreak, affected pigs may need to be culled to prevent further spread of the virus. Educating pig farmers, veterinarians, and the public about ASF transmission, symptoms, and preventive measures to promote early detection and reporting. Research into ASF vaccines is ongoing, and in some regions, vaccination

of pigs may be considered as part of the control strategy. However, there is currently no widely available commercial vaccine for ASF. These policies are often implemented by government agencies in collaboration with veterinary authorities, pig producers, and other stakeholders to effectively manage and control ASF outbreaks.

Conflict of interest

On the behalf of all authors of the manuscript this is no potential conflict of interest was reported by author.

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