

EPIDEMIOLOGICAL AND PATHOLOGICAL STUDIES ON OUTBREAKS OF SWINEPOX IN PUNJAB

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SUMMARY

An investigation was carried out on swinepox outbreaks reported in two piggery farms from Ludhiana district of the Punjab state. The overall morbidity, mortality and case fatality rates were found to be 22.72, 3.63 and 16.0%, respectively. High morbidity rate was reported in 3-4 months and 6-9 months age groups in comparison to adults. Clinical signs observed were high fever (106-107 °F), pox like lesion on various body parts (face, behind the ears, snout, belly, legs) and ultimately leading to brownish scab. The disease was diagnosed by histopathological examination of skin lesions which revealed intracytoplasmic inclusion bodies in keratinocytes.

Keywords: Histopathology, Intracytoplasmic inclusion, Swinepox

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Swinepox is a highly contagious disease belonging to genus suipoxvirus of family poxviridae (Moorkamp *et al.*, 2008). The disease is worldwide in distribution and few outbreaks of swinepox have been documented from Punjab, India (Mahajan *et al.*, 2011; Mittal *et al.*, 2011). Swinepox is highly host specific and pigs are the only host species of swinepox virus (Jubb *et al.*, 1992; Bora *et al.*, 2018). The disease is characterized by varying degree of pox skin lesion and is transmitted by direct contact with infected pigs. However, the pig louse (*Haematopinus suis*) and domestic flies (*Musca domestica*) serves as mechanical vectors for transmission of the virus (Munz and Dumbell, 1994). Further, disease is mainly seen in pig population with poor management and sanitary condition at the farm. The present communication reports outbreaks of the swinepox in Punjab and further describes the clinical features, epidemiological and histopathological changes.

Two outbreaks of swinepox were recorded in district Ludhiana, Punjab. The detailed clinical history and epidemiological data of the outbreaks was recorded (Table 1). Skin scabs were collected in 10% neutral buffered formalin from suspected cases of swinepox. Detailed post-mortem examination was conducted on dead animals following routine procedures. Tissue samples were collected in 10% neutral buffered formalin for routine histopathology. The tissue samples were dehydrated and embedded in paraffin and sections (4-5 µm thick) were cut and stained with haematoxylin and eosin (H&E) as per standard protocol of Luna (1968).

Outbreaks of swinepox were observed in two farm of district Ludhiana, Punjab. Out of total of 110 animals (Farm 1 = 64; Farm 2 = 46), 25 (Farm 1 = 15; Farm 2 = 10) were affected and 4 (Farm 1 = 3; Farm 2 = 1) died of swinepox.

The overall morbidity, mortality and case fatality rates were found to be 22.72, 3.63 and 16.0%, respectively (Table 1). Jindal *et al.*, 2015 reported less morbidity rate (13.63%) and high case fatality rate (72.22%) due to the disease as compared to present study. In the present study, high morbidity rate was reported in 3-4 months and 6-9 months age groups in comparison to adults. Mortality was reported in 3-4 months age group. However, adults were not affected and did not show any clinical sign of the disease. House and House (1994) reported high morbidity which may approach 100 percent in young pigs up to 4 months of age. Affected pigs were having high fever, dull and anorectic. Skin lesions varying from erythema, papule, vesicle, pustules and scab formation were recorded on the face (Fig. 1), behind the ears (Fig. 2), snout (Fig. 3), belly (Fig. 4) and legs. Similar clinical signs of almost same severity have been reported earlier by many workers (Mittal *et al.*, 2011; Jindal *et al.*, 2015; Bora *et al.*, 2018; Mech *et al.*, 2018). In one of the affected male pigs, pock lesions were reported on testicles (Fig. 5). In few affected pigs, dark scabs were formed particularly at belly giving

Table 1

Age group	Epidemiological data of outbreaks			
	3-4 months	6-9 months	Adult	Total
Farm 1	35	20	9	64
Affected	8	6	1	15
Death	3	-	-	3
Farm 2	25	15	6	46
Affected	7	3	-	10
Death	1	-	-	1
Overall Morbidity (%)	25	25.71	6.66	22.72
Overall Mortality (%)	6.66	-	-	3.63
Overall Case fatality (%)	26.66			16

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Fig. 1-7. (1) Various stages of pock lesions on face in swine pox affected pig; (2) Pock lesions on back side of the ear in swine pox affected pig; (3) Pock lesions on snout of pig in swine pox disease; (4) Pock lesion on belly of pig affected with pox disease; (5) Spotted appearance of pig abdomen affected with pox disease; (6) Pock lesions on testicles of pig with pox disease; (7) Intracytoplasmic inclusion bodies in skin epithelium (100×)

them spotted appearance (Fig 6). Postmortem examination of dead pigs revealed no characteristic lesion in internal organs. However, interstitial pneumonia was recorded in one dead pig. Histopathological examination of skin revealed ballooning of keratinocytes in the stratum spinosum and large intracytoplasmic inclusion bodies (Fig. 7), characteristic of swinepox. The characteristic eosinophilic intracytoplasmic inclusion in the skin epithelium was previously reported by various authors (Singh *et al.*, 2005; Moorkamp *et al.*, 2008; Mahajan *et al.*, 2011).

Since, pig population is increasing day by day in Punjab. So, further studies are required to find out prevalence of swinepox in different agroclimatic zones of Punjab.

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