A retrospective study on various clinical complications related to the body systems in pigs with special reference to respiratory complications in Hassan district, Karnataka state

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Abstract
A questionnaire based study on various clinical complications related to different body systems of pigs with special reference to respiratory system has been carried out in fifty different pig farms of Hassan district, Karnataka state during the period from April 2019 to March 2020. The clinical problems related to digestive system were in the highest order (96%) followed by systemic/fever (80%), skin problems (64%). The problems related to the respiratory system like coughing, laboured breathing, nasal discharge, and dryness of snout etc., (46%), reproductive problems (38%), endoparasites (28%), urinary system (12%). The complications related to nervous system (10%) was also observed. The respiratory problems appeared at considerable levels. Further detailed analysis related to the respiratory diseases caused by the various agents along with the managemental and environmental factors is warranted for the future studies to know the major factors involved in inducing the respiratory problems in pigs of the study area.

Keywords: pig, hassan, clinical complications questionnaire, respiratory problems

Introduction
The growing global human population creates an increased demand for animal source foods. To meet this demand, pigs are one of the preferred species due to their certain inherent traits like high fecundity, better-feed conversion efficiency, early maturity and short generation interval. Accordingly, there has been a substantial increase in the volume of pig meat produced (38% of the world livestock meat consumed) in the last 20 years, often associated with intensification of production and increased movement of pigs between countries[1-2]. Of all species, pigs are likely to constitute a greater share of the growth in the livestock subsector. Pig farming also requires small investment on buildings and equipments. It has immense potential to ensure nutritional and economic security for the weaker sections of the society. India possesses one of the largest livestock wealth in the world and a quarter of the agricultural gross domestic product is contributed by the livestock sector [3]. Among the livestock species, pig finds an important place as it being reared by socio-economically weaker sections of the society and pig rearing is one of the most important occupations of rural society especially among the tribal masses of India. It has largely remained under free range rearing with the weaker sections of the society both as a source of income and a choice of meat for consumption. Over 70 percent of the pigs kept in India are indigenous. Pig rearing is still in the unorganized sector that requires science and technology driven support to make it a vibrant enterprise. The various stakeholders require promotion at various levels such as technology, entrepreneurship development, and financial support for Indian pig farming in attaining a place at global level. In general, the infectious diseases cause significant economic losses to the pig industry more important are the viral agents that cause respiratory diseases. The increased pressures of rearing pigs in modern-day confinement systems have the potential to overcome the robust defences of respiratory system and lead to the development of respiratory disease. In most swine-producing areas, large groups of pigs are housed under intensive conditions, often in geographical regions with a dense pig population [4].
Respiratory diseases may result when the respiratory defences are compromised by exposure to fine particulates, such as dust, and volatile chemicals, such as ammonia from animal waste. The high stocking density in a closed environment also facilitates transmission of airborne pathogens within a herd and between herds. The Porcine respiratory and reproductive syndrome (PRRS) virus, Porcine circovirus-2 (PCV-2), Porcine Parvovirus (PPV), Pseudorabies virus (PRV), Classical swine fever virus (CSFV) and Swine influenza virus are known to cause respiratory disease either individual or in combination by concomitant infection. Many of these primary respiratory pathogens adversely impact respiratory defences, leading to the development of costly secondary bacterial bronchopneumonia.

The study related to the various clinical complications associated with different body systems of pigs is very much essential to understand the clinical picture of the pig farms so that appropriate therapeutic measures can be initiated. In this context a study had been undertaken in Hassan district to know the various clinical complications associated with pigs with special emphasis on respiratory complications.

Materials and Methods

The data on the information related to the various clinical complications pertaining to the different body systems of pigs was collected by visiting fifty different pig farms of Hassan district by using the self made questionnaire during the period from April 2019 to March 2020. The information was collected based on the observations made by the author in person and the farmers’ opinion.

Results

A retrospective study based on the observations of the pig farmers during their entire course of pig farming activities on various clinical complications related to the different body systems of pigs has been collected through questionnaire. A total of 50 pig farmers of Hassan district who were having ongoing farming activities, the farmers recently vacated the farms, and the farmers who have done pig farming way back few years ago were included and the results were tabulated (Table 1; Fig.1).

Table 1: Common clinical problems related to the body system of pigs observed by the pig farmers during their entire course of pig farming in Hassan district

| Sl. No. | Body system            | Number of farms in which the clinical problems were observed | Percentages |
|--------|------------------------|-------------------------------------------------------------|-------------|
| 1      | Systemic/Fever         | 40                                                          | 80          |
| 2      | Digestive system       | 48                                                          | 96          |
| 3      | Respiratory            | 23                                                          | 46          |
| 4      | Urinary                | 06                                                          | 12          |
| 5      | Nervous system         | 05                                                          | 10          |
| 6      | Reproductive           | 19                                                          | 38          |
| 7      | Endoparasites          | 14                                                          | 28          |
| 8      | Skin                   | 32                                                          | 64          |
| 9      | Others                 | 09                                                          | 18          |

Table 2: Common clinical signs related to the respiratory system observed by the pig farmers during their entire course of pig farming in Hassan district

| Sl. No. | Clinical signs           | Number of farms in which the signs have been observed | Percentages |
|--------|--------------------------|-------------------------------------------------------|-------------|
| 1      | Coughing                 | 11                                                    | 47.83       |
| 2      | Laboured breathing       | 06                                                    | 26.09       |
| 3      | Fever                    | 15                                                    | 65.22       |
| 4      | Lethargy                 | 16                                                    | 69.57       |
| 5      | Anorexia                 | 22                                                    | 95.65       |
| 6      | Discoloration of extremities | 08                                                  | 34.78       |
| 7      | Weight loss/slow growth  | 15                                                    | 65.22       |
| 8      | Nasal /ocular discharges | 03                                                    | 13.04       |
| 9      | Dryness of snout         | 02                                                    | 8.70        |
| 10     | Neurological symptoms    | 02                                                    | 8.70        |
| 11     | Deaths                   | 07                                                    | 30.43       |
Fig 1: The system wise observations of common clinical problems by the pig farmers during their entire course of pig farming in Hassan district (based on questionnaire data).

Fig 2: Common clinical signs related to the respiratory diseases observed by the pig farmers during their entire course of pig farming in Hassan district (based on questionnaire data).

Plate 1: Ulcer

Plate 2: Congenital limb abnormality
Plate 3: Haemorrhages at the abdomen

Plate 4: Hyperaemia of the skin

Plate 5: Nasal discharge

Plate 6: Abortion

Plate 7: Cutaneous necrotic patches

Plate 8: Abscess at the limbs

Plate 9: Ear margin necrosis

Plate 10: Stunted growth
pigs which revealed 30.9 per cent in western parts of Uttar Pradesh [8], 13.2 per cent in Assam and 61.7 per cent in south-eastern parts of Andhra Pradesh [9]. Similarly, Fablet et al. [10] conducted a cross sectional study in 143 farrow-to-finish pig farms in three regions of western France and found that pneumonia and pleuritis were observed in 69.1per cent and 14.4 per cent of pigs, respectively, indicating, lung lesions in slaughter pigs were common. However, the information on these aspects in Hassan region was not found. Anoopraj [11] opined that the changing scenario of pig husbandry from scavenging system of pig rearing to small piggery units, has contributed to the evolution of respiratory diseases in swine herds in India. Husbandry practices may interact directly with both the infection pressure and the pig susceptibility to lung diseases or indirectly by influencing hygienic factors [10]. Yaeger and Van Alstine [9] also noted that the increased pressures of rearing pigs in modern-day confinement systems have the potential to overcome robust defences of respiratory system and lead to the development of respiratory disease. In most swine-producing areas, large groups of pigs were housed under intensive conditions, often in geographical regions with a dense pig population. The results obtained in the present study clearly indicated that respiratory problems in the pigs in this region need an intervention to be tackled.

The pig farmers and the author (in-person) have made some observations on the various clinical complications related to the respiratory system of pigs which revealed anorexia, lethargy, coughing, discoloration of extremities, deaths in the herds, laboured breathing, nasal/ ocular discharges, dryness of snout and neurological symptoms like convulsions etc. Constable et al. [12] summarised that sneezing, coughing, dyspnoea and altered growth parameters were the four basic signs of respiratory disease in pigs. They also reported that the principle sign of PRDC was pneumonia which was manifested as coughing, laboured breathing, fever, lethargy, recency, anorexia, discoloration of the extremities/cyanosis, weight loss and slow growth, nasal and ocular discharges and death. Morris et al. [13] and Stärk, [14] opined that respiratory diseases are commonly accompanied by the typical clinical signs of coughing, which could be used to estimate disease prevalence by defining a ‘cough index’. This system used on its own seems likely to miss cases because under good environmental conditions subclinical disease may develop. At a herd level, clinical inspection failed to detect 30 per cent of infected herds. The sensitivity of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when compared with gross lesions at killing, but a comparativ of clinical cough is of 37.7 per cent in market pigs when 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respiratory complications are one of the major clinical issues among the swine industry. The pig farmers are neglecting the clinical issues related to the respiratory system hence, they need effective strategies for the control.

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