PERSPECTIVE STUDY ON TUBERCULOSIS IN
PIGS - POSTMORTEM FINDINGS

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Received : 18-10-2010           Accepted : 22-04-2011

ABSTRACT

The prevalence of tuberculosis among pigs caused by Mycobacterium spp is described in this paper. The period between May 2008 to February 2010, a total of 108 pigs/piglets were subjected to postmortem examination showed gross pathological lesions indicative of tuberculosis in nine pigs. Amongst this, 3(2.8%) pigs belonging to three way crosses and 6(5.6%) were 75% crossbred pigs were found positive for Acid Fast Staining (AFS) technique based on the retention of primary stain by the bacilli. The infected pigs with primary tuberculous lesions in the parenchymatous organs were demonstrated with typical reproducible AF bacilli. The sources of infection might have been either concentrate feed to the pigs or cow’s milk that was provided as supplement.

Key words : Pig tuberculosis, Acid fast bacilli, Epidemiology, Zoonosis.

INTRODUCTION

Tuberculosis is an infectious disease occurring in several animal species including domestic and wild animals, as well as humans. Pigs usually acquire infection by consumption of unpasteurised milk, milk products from infected cows and/or unsterilised byproducts from slaughter houses. M. avium complex (MAC) and /or opportunistic Mycobacteria were obtained on necropsy of pigs infected with tuberculosis (Pavlik et al., 2005 and Cvetnic et al., 2006). Sadana (1975) and Padmanaban and Rai (1975) also reported that pigs from Delhi, Haryana, Punjab and Tamilnadu had 0.5% caseous and 13% of calcified foci in the parenchymatous organs. In Asia, nearly 94% of cattle and 99% of buffalos are either partly controlled for bovine tuberculosis or not at all controlled (Cosivi et al., 1998). M. bovis and M. tuberculosis have been isolated from human and animals, but pigs and other wild animals are not at all screened against tuberculosis in India (Verma and Srivastava, 2001). Tuberculosis in pigs remains to be the highly infectious and the most important bacterial disease resulting in colossal economic losses, causing higher morbidity and mortality amongst pigs as well as major global public health problem (WHO, 1982). However, the origin and transmission of infections between human and animals has not been investigated. The present study is reported on occurrence of tuberculosis lesion in pigs during postmortem examination.

MATERIALS AND METHODS

The period from May 2008 to February 2010, a total of 108 postmortem of pigs/piglets were

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conducted at Livestock Research Station, Kattupakkam, TamilNadu. Amongst nine pigs, three animals of three way cross (Large White Yorkshire + Landrace + Durac) and six animals of 75% cross (LargeWhiteYorkshire + Desi pigs) were detected to have mild to moderate caseous and calcified tuberculous lesions in the parenchymatous organs on necropsy. Liver, lungs, mescentric lymph node and intestine were removed and examined for calcified (White cheese material) nodules, typical (characteristic) microorganism of Acid Fast bacilli. Smears from nodules of parenchymatous organs were subjected to Ziehl-Neelsen staining technique. After the complete necropsy, tissue specimens were collected and fixed in 10% formalin for the routine histopathological studies. The bacteriological culture of the Mycobacterium was not conducted in these specimens. The source of concentrate feed for these animals was received regularly from Poultry Research Station (PRS), Nandanam and hotel swill feed was used particularly in 75% of crossbred pigs. Weak piglets were provided with cow’s milk as supplement. There is no major disease outbreak reported during this period in this farm.

RESULTS AND DISCUSSION

The incidence of typical tuberculous lesion of 2.8% in three way crossbred and 5.6% in 75% of crossbred pigs recorded in this study was in agreement with the findings of Sadana (1975) and Padmanaban and Rai (1975) they also reported 0.5% and 13% of caseous and calcified foci in the parenchymatous organs of slaughtered pigs. However, in this report caseous and calcified foci in the parenchymatous organs (Figures 1, 2 and 3) had the typical (characteristic) tuberculous lesions invariably in all the nine animals. Four out of nine pig’s tissue smears revealed that 3.7% of cases had typical AF bacilli by microscopic examination based on the retention of primary stain by the bacilli. However, caseous and calcified foci from the lungs, mescentric lymph node smear yielded Mycobacteria organisms other than microorganism such as Nocardia, Staphylococcus, Actinobacillus and Actinomyces spp (Padmanaban and Rai, 1975 and Cosivi et al., 1998). Concurrent with Sadana (1975) and Pavlik et al. (2005), the present study revealed some pigs were revealing progressive weight loss, emaciation and debility (Fig. 1). Lesions included caseous and calcified foci found in all the parenchymatous organs with typical cheesy white nodules of varying sizes (0.5mm to 1cm) diffusely spread over its surface. Lungs appeared congested and consolidated in most cases with typical calcified nodules (3-7cm in size).

The most important observation in this study was the prevalence of Mycobacterium in pigs and other animal species is to a considerable extent, the sources of infection might have been either
concentrate ration to the pigs or unpasteurized cow’s milk that was provided as supplement was in agreement with Sharma et al. (1985) and Verma et al. (1987). The reasons for the occurrence of tuberculosis in pigs due to different levels of infection in poultry in individual countries make themselves felt in differing contribution of Mycobacterium species which causes tuberculous lesions in pigs and animals.

In addition to the characteristic mortality amongst grower pigs in this investigation, one of the features of Mycobacterium spp and/or opportunistic Mycobacteria was that it persists for long periods in pigs without clinical disease. This can lead to excretion of organisms via faeces and perpetuation of infection in the shed which can result in faecal contamination of feed and water to other susceptible piglets in the pens (Cosivi et al., 1998 and Matlova et al., 2005).

The observation of gross pathological lesions and reproduced the same morphological appearance of AF bacilli from the parenchymatous organs (Figure 4) in this study was well corroborated with the results of Padmanaban and Rai (1975); Pavlas et al. (1985) and Verma and Srivastava (2001). The present study, therefore, recommends a wide spread screening of pigs to assess the carrier status that should enable to institute effective control measure in view of global prevalence of tuberculosis and zoonotic importance of Mycobacterium spp. There is an urgent need to evolve technique that not only identify and characterize tubercle bacilli, but also facilitate epidemiological studies in order to back trace of infection thereby facilitating formulation of effective control strategies for both animals as well as humans.

REFERENCES