
A CASE OF CONCURRENT OCCURRENCE OF METASTRONGYLOSIS AND GNATHOSTOMOSIS IN A WILD BOAR (*Sus scrofa*)

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ABSTRACT

Free living feral pigs are known reservoirs of various pathogens. Post-mortem examination of the carcass of a wild boar in the Department of Veterinary Pathology revealed worms in the lower trachea and bronchi, along with adult round worms in the stomach. The worms in the respiratory tract and stomach were identified as *Metastrongylus* sp. and *Gnathostoma* sp. respectively. The present report describes the pathological changes induced by these parasites in the host animal. Also, the report indicates the potential risk of humans and domestic swine contracting various infectious diseases from wild pigs.

Keywords : Gnathostomosis, metastrongylosis, wild boar

INTRODUCTION

Wild boars (*Sus scrofa*) harbour different pathological agents including

viruses, bacteria and parasites that can be transmitted to humans and domestic animals. Human encroachment on animal habitat and increased use of lands for agricultural purposes deplete the resources available for wild animals. Shrinking natural habitat and limited resources force these animals to stray into human habitats. While feral pigs are considered pests by farmers, they are one among the most valued animals for the hunters. All these have increased the chances of exposure of wild boars to domestic animals and humans, thereby increasing the possibility of transmission of various infectious diseases. The present study documents the concurrent occurrence of metastrongylosis and gnathostomosis in a wild boar.

MATERIALS AND METHODS

The carcass of a wild boar (Fig. 1) brought for necropsy in the Department of Veterinary Pathology, College of Veterinary

and Animal Sciences, Mannuthy, formed the study material. The animal was found ailing in the forest and had died on its way to University Veterinary Hospital, Mannuthy. Detailed necropsy was conducted and gross lesions were recorded. The worms collected from the carcass were submitted to the Department of Parasitology for identification. Impression smear from lungs were stained using Field's stain and examined under oil immersion objective of the microscope. Representative samples of tissues were collected in 10 per cent formalin for histopathology. Formalin fixed tissue samples were subjected through steps of dehydration, impregnation and paraffin embedding. The tissue sections were cut at 4-5 μm thickness and stained with Haematoxylin and Eosin (Suvarna *et al.*, 2019).

RESULTS AND DISCUSSION

Necropsy revealed long, slender white coloured worms in the lower trachea and bronchi, multiple abscesses in the apical pulmonary lobes and focal areas of hepatic necrosis. The worms in the trachea were identified as *Metastrongylus* sp. (Fig. 2). Adult round worms in the stomach were identified as *Gnathostoma* sp. based on the characteristic head bulb bearing rows of hooklets (Fig. 3). Lungworms predispose the animals to a variety of secondary infections by viral and bacterial agents

(Da Silva and Müller, 2013). Presence of numerous bipolar organisms and cluster of cocci in the impression smear of lungs suggested that the abscesses and suppuration had resulted from secondary bacterial complications. The common isolates from cases of suppurative pneumonia secondary to metastrongylosis were reported as *Staphylococcus* sp. and *Pasteurella* (Copland, 1974). The pulmonary abscesses (Fig. 4) observed in this case could be due to the secondary infection by any of these agents. Microscopically lung lesions consisted of suppurative pneumonia along with oedema and fibrin thrombi formation (Fig. 5). *Gnathostoma* sp. burrowing deep into the stomach wall causes cystic cavitations or granulomatous lesions which can ultimately get transformed into tumours (Ishiwata *et al.*, 1998). Here, the worms formed small cavities on stomach walls at places where they had penetrated the mucosa. Also larval migratory tracts in the liver could be appreciated as focal white spots on the surface (Fig. 6). Histopathologically, liver revealed necrotic and degenerative changes in the centrilobular area along with periportal fibroplasia (Fig. 7). Based on gross and microscopic findings, the cause of death was concluded as suppurative bronchopneumonia which could have resulted from secondary bacterial infections. The migration of lungworms and their larvae might have



Fig. 1. Carcass of wild boar



Fig. 2. Lung worms in trachea



Fig. 3. Round worms in stomach

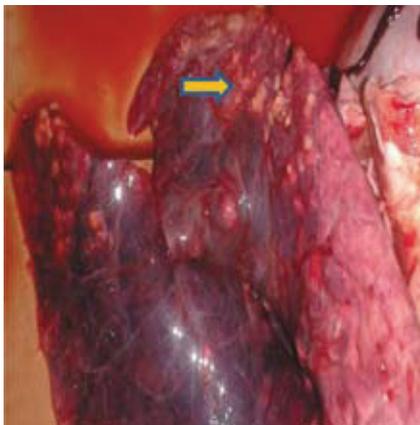


Fig. 4. Pulmonary abscesses

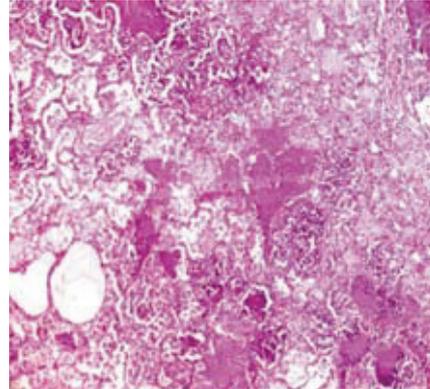


Fig. 5. Suppurative pneumonia and oedema in lungs (H&E x 100)



Fig. 6. Liver with migratory spots of *Gnathostoma* larva

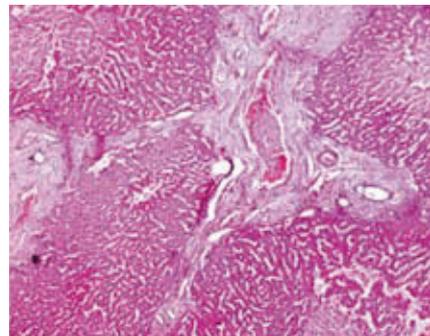


Fig. 7. Centrilobular necrosis and periportal Fibrosis in liver (H&E x 100)

induced damage to the lung parenchyma which facilitated secondary infections.

Gnathostomosis has been recognized as an emerging zoonotic disease in many of the countries and feral pigs are one among the most important definitive hosts or the

parasite (Janice and Lucey, 1993; Cantlay et al., 2017). Infected pigs act as source of infection to intermediate hosts from which humans acquire infection. Human infection is caused by ingestion of under cooked or raw meat of intermediate hosts such as fish, frog, poultry etc. or by drinking water containing infected copepods (Herman and Chiodini, 2009; Liu et al., 2020). Larvae present in infected meat may also cause skin infection through wounds. The larvae entering human tissues cause cutaneous or visceral larva migrans and damage vital organs such as brain, lungs, eyes etc. Measures to minimise exposure of domestic population to feral pigs and abstaining from unauthorized hunting activities can help to break the transmission chain of gnathostomiasis.

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