Occurrence of fatal syngamosis in emu birds of Kerala

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Abstract Two male and two female emu birds of 8 months to 1 year old reared in a private farm were brought dead to College of Veterinary and Animal Sciences, Pookode for postmortem examination during the period from July to September, 2010. The birds were emaciated and drooling of blood from the mouth was observed for 2 days prior to death. Postmortem examination of the dead birds revealed occurrence of large numbers of red coloured worms throughout trachea with histopathological changes. The worms were identified as *Syngamus trachea* based on morphology. Economic losses due to this parasitism are also described.

Keywords *Syngamus trachea* · Emu · Kerala

Introduction

Emu (*Dromaius novaehollandiae*) is the second largest bird in the world and is well adapted to extreme temperature. Farmers can raise them on marginal land when they are not using for crops. The oil, skin, meat, eggs and even the feathers and nails of emu are saleable products (Gujral

2009). Though these birds are highly resistant to common diseases, many times parasites may pose threat to their health. The present communication reports the heavy infection of *Syngamus trachea* in emu birds.

Materials and methods

4 out of 20 emu birds reared by a private owner under semi intensive system in Wayanad district of Kerala died on different days during the period from July to September 2010. Drooling of blood from mouth was observed in all the birds about two days prior to death. The carcasses of the dead birds (two male and two female birds of 8 months to 1 year old) were brought to the College of Veterinary and Animal Sciences, Pookode for postmortem examination. The parasites observed in situ in the trachea at the time of autopsy were collected and they were processed by routine parasitological procedure for identification of species based on the descriptions of Soulsby (1982). Gross abnormalities observed in the trachea were documented and the tracheal segments with gross lesions were collected and preserved in 10% buffered neutral formalin for histopathological examination (hematoxylin and eosin staining).

Results and discussion

On postmortem examination, 150–175 bright reddish coloured worms were found throughout the length of the trachea attached to the mucosa and surrounded by mucus (Fig. 1). The males and females remained joined together in a state of permanent copulation even after the separation from trachea forming a characteristic Y shape (Fig. 2). The males measured 2–4 mm long and the females were

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7–12 mm. The mouth opening was wide and the buccal capsule was cup shaped, bearing small teeth at its base. Two equal spicules were present in males. These parasites were thus identified as *S. trachea*.

Emu birds are comparatively resistant to diseases and there are only a few reports of parasitic diseases in them. Stewart (1994) recorded the presence of nematodes like *Baylisascaris* sp., *Chandlerella quiscalis*, *Dromastrongylus bicuspis* and *S. trachea* in emu. The earlier reports on helminthic infections in emu are limited from Kerala state (Swapna et al. 2010).

In the present study too, the disease was observed in young birds (Saif 2003) of age group 8 months to 1 year. Earthworms play an important role in the life cycle of *S. trachea*, serving as transport (paratenic) host in the transmission. In the present case, as these birds were reared in ground with wire mesh enclosures thereby accessibility to soil and chances of ingestion of infected earthworms or infective eggs of *S. trachea* by the birds were increased.

The carcasses were emaciated and pale. Hemorrhagic spots were also observed at the site of parasitic attachments in the tracheal mucosa. Histopathological examination revealed the infiltration of inflammatory cells in the mucosa mainly with lymphocytes, macrophages and few heterophils. Proliferation of goblet cells and mucous glands (Fig. 3) were evident indicating haemorrhagic tracheitis. Congestion and hemorrhages were also observed throughout the layers of trachea.

Emaciation and paleness of the carcass of dead birds can be due to the blood sucking habit of worms. Further, trachea of emu, having a larger surface area assists in attachment of more worms compared to other birds thereby leading to severe hemorrhagic tracheitis (Johnstone et al. 1998) which can result in obstruction and thereby suffocation leading to death in heavily parasitized birds (McGregor et al. 1961).

Fig. 1 Reddish coloured *S. trachea* worms attached to the mucosa of trachea. (Color figure online)

Fig. 2 Adult *S. trachea* worms forming 'Y' shape

Fig. 3 Proliferation of goblet cells and mucous glands (H&E ×100)

Considering the economic value of emu birds (Rao 2004; Gujral 2009), many efforts have to be taken to control syngamosis in endemic areas by adopting appropriate control measures in commercial farms.

References

- Gujral R (2009) Emu—this bird means business. Science Tech Entrepreneur
- Johnstone C, Guerrero J, Chou S, Hobday M, Howe-Smith R, Eisenberg A (1998) Parasites and parasitic diseases of domestic animals. University of Pennsylvania. http://cal.vet.upenn.edu/projects/merial/Strongls/strong_3.html
- McGregor JK, Kingscbe AA, Rummeler FW (1961) Field trials in the control of gapeworm infections in pheasants. Avian Dis 5:11–18

- Rao NS (2004) A study on the performance of emu (*Dromaius novaehollandiae*) in Andhra Pradesh. MVSc thesis submitted to the Acharya N.G. Ranga Agricultural University, Hyderabad. pp 1–62
- Saif YM (2003) Diseases of poultry, 11th edn. Iowa State Press, Iowa City, p 952
- Soulsby EJJ (1982) Helminthes, arthropods and protozoa of domesticated animals, 7th edn. Bailliere Tindall, London, pp 196–197
- Stewart J (1994) Ratites. Avian medicine: principles and application. In: Ritchie, BW, Harrison GJ, Harrison LR (eds) Avian medicine: applications and principle. Wingers Publishing, Inc., Lake Worth, pp 1284–1326
- Swapna SA, Arun G, Julie B, Gopakumar S, Viswanathan H (2010) *Syngamus trachea* infestation in emu. Zoo's Print J 25:27