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Short Communication

PATHOLOGICAL STUDY OF *OESTRUS OVIS* INFECTION IN SHEEP AND GOAT

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SUMMARY

The present study describes the pathomorphological findings of *Oestrus ovis* infection in sheep and goat. Detailed necropsy was conducted. It revealed the presence of both mature and immature larvae of approximately 1-2 cm in length in the nasal as well as cranial cavity. Based on their morphological characteristics, including the presence of dark bands on dorsal surface and spines on ventral side, the larvae were identified as third stage larvae of *O. ovis*. Grossly, both the animals revealed congestion in brain and lungs, presence of excessive amount of froth in the tracheal lumen, haemorrhages and oedema in the lungs. Histopathologically, the nasopharynx revealed moderate degree of congestion, haemorrhages, deciliation and infiltration of mononuclear cells as well as polymorphonuclear cells. Brain revealed mild congestion and oedema. In conclusion, *O. ovis* infection in nasal and cerebral cavities of sheep and goat produced lesions mainly in nasopharynx, lungs and brain.

Keywords: Cranial, Goat, Larvae, Nasal, *Oestrus ovis*, Sheep

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The parasite *Oestrus ovis* L. is an obligatory parasite of the nasal cavity and paranasal sinuses, causes cavitary myiasis (Karakurt *et al.*, 2020). The parasite mostly infects sheep, but it can also infect goats, camels, deer, reindeer, elk, ibex, dogs, and humans (Sharma *et al.*, 2014).

One carcass each of an adult sheep and goat were presented to the post-mortem hall, Department of Veterinary Pathology, College of Veterinary Sciences of the Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar. The animals had a history of subnormal temperature, dullness, mucopurulent nasal discharge, various neurological symptoms including incoordination, head pressing against the objects and loss of balance. Subsequently, routine systemic necropsy was performed. The nasal cavities, chonchae, sinuses and brain were carefully examined for larvae. Live larvae were collected from the brain and nasal cavities in 70% ethyl alcohol for additional morphological analysis. Tissue samples including nasal turbinate, trachea, lungs, and brain were collected in 10% neutral buffered formalin for the histopathology. After fixation, tissues were processed by routine paraffin embedding technique. Paraffin embedded tissues sections were cut into 4 µm thickness using semi-automatic rotary microtome (Yorco YSI 060 semi-automatic rotary microtome). Sections were then stained with haematoxylin and eosin (H&E) stain as per Luna (1968). The slides were examined under light microscope and histopathological interpretation was carried out.

On external examination, mucoid discharge was evident from the nostrils. Mature and immature larvae of *O. ovis*, approximately of 1-2 cm in length, were found in the nasal and cranial cavities (Fig. A) of both sheep and goat. Microscopic examination of collected larvae revealed the presence of transverse dark bands on their dorsal surface of each segment, buccal hooks on anterior end and spines on their ventral aspect. Posterior stigma plates were D-shaped with presence of central button, were dark and were radially arranged with no distinct suture. The larvae were identified as *O. ovis* based on the presence of 'D' shaped, closed, dark brown stigmal plates with deep respiratory holes arranged in a radial pattern.

On gross examination, Nasal turbinates showed congestion. Tracheal lumen showed presence of excessive froth (Fig. B) along with the mild congestion in mucosa. The lungs of sheep showed diffuse congestion, haemorrhages and oedema (Fig. C) whereas, in case of goat, only congestion was evident in the lungs. Brain revealed mild congestion in both sheep and goat. Histopathological examination of nasal turbinate revealed congestion, haemorrhages, deciliation, desquamation of the mucosal epithelium and infiltration of mononuclear (mainly lymphocytes) (Fig. D) as well as polymorphonuclear cells. Mild vascular changes were noticed in trachea. Serous pneumonia was characterized by the presence of serous exudate in alveolar lumen (Fig. E), congestion, haemorrhages and mild to moderate infiltration of mononuclear cells (mainly lymphocytes) as well as polymorphonuclear cells (mainly eosinophils) in the interstitium (Fig. F). Brain revealed mild congestion, oedema and Satellitosis (Fig. G).

In conclusion, based on history, clinical signs, gross

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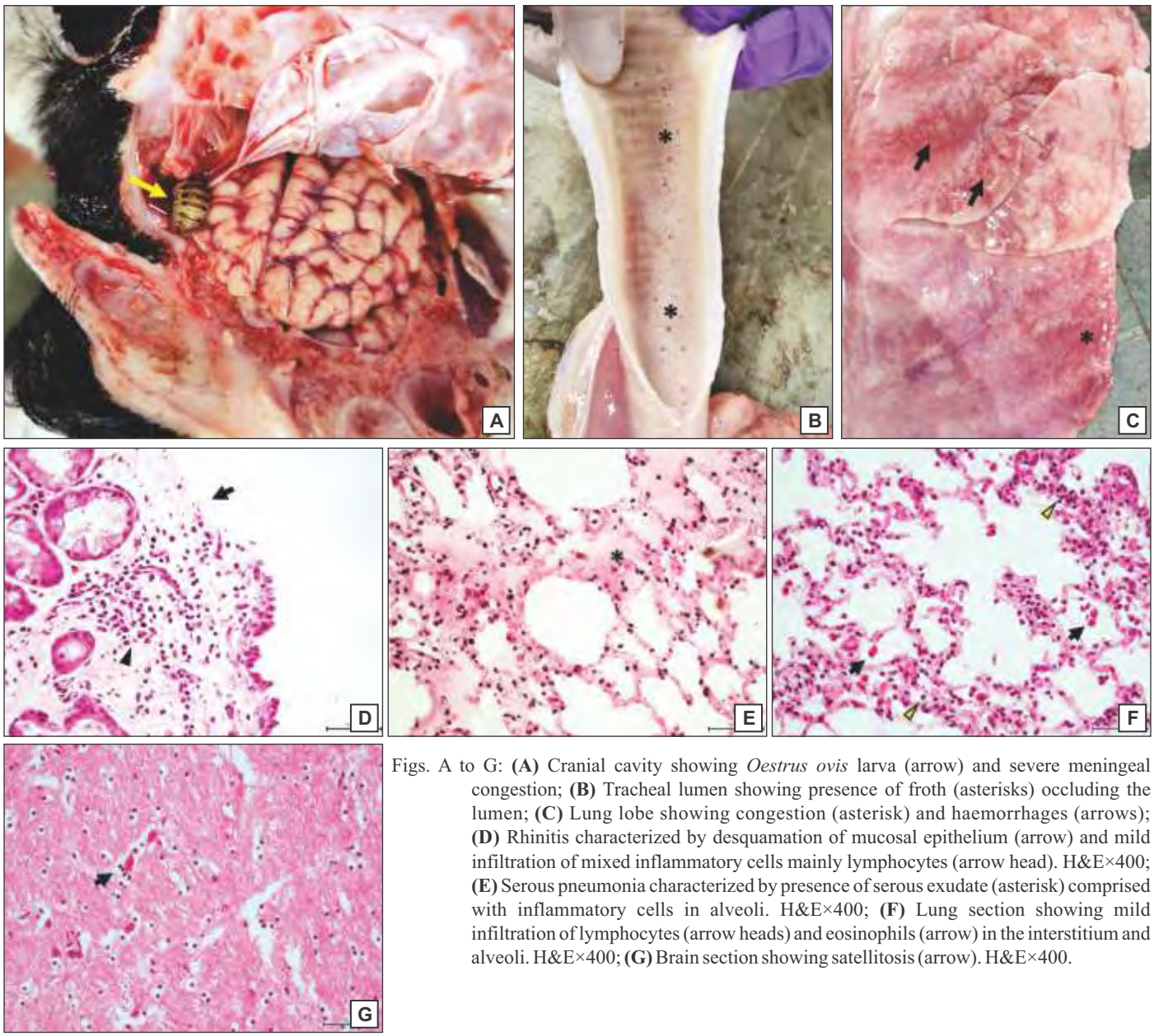

Figs. A to G: **(A)** Cranial cavity showing *Oestrus ovis* larva (arrow) and severe meningeal congestion; **(B)** Tracheal lumen showing presence of froth (asterisks) occluding the lumen; **(C)** Lung lobe showing congestion (asterisk) and haemorrhages (arrows); **(D)** Rhinitis characterized by desquamation of mucosal epithelium (arrow) and mild infiltration of mixed inflammatory cells mainly lymphocytes (arrow head). H&E×400; **(E)** Serous pneumonia characterized by presence of serous exudate (asterisk) comprised with inflammatory cells in alveoli. H&E×400; **(F)** Lung section showing mild infiltration of lymphocytes (arrow heads) and eosinophils (arrow) in the interstitium and alveoli. H&E×400; **(G)** Brain section showing satellitosis (arrow). H&E×400.

and histopathological findings and parasitological examination, oestrosis (parasitism by *O. ovis*) was confirmed in both the cases.

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