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Pimply gut in goat: A case report

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Abstract
In many of the developed and developing nations, small ruminants are crucial to the socio-economic stability of traditional farming systems. Sheep and goat are valuable sources of high-quality food items including meat and milk. *Oesophagostomum* or nodular worm is a parasitic nematode of the large intestine and is one of the most common and widely distributed nematodes of livestock and ruminants. In the present case report, a goat was received for post-mortem examination and based on the gross findings and histopathological examination, it was diagnosed as oesophagostomiasis.

Keywords: *Oesophagostomiasis*, pimply gut, nodules, histopathology

Introduction
Numerous rural communities in India rely on sheep and goats as a source of income and employment. Sheep and goats are tiny ruminants that are significant to the Indian economy [1]. The productivity of goats and sheep is severely hampered by parasitic illnesses [2]. In India, oesophagostomiasis is one of the most common and harmful gastrointestinal nematode disease in livestock [3]. In small ruminants, *Oesophagostomum columbianum* and *Oesophagostomum venulosum* are gastrointestinal parasites that can cause anaemia, protein-losing enteropathy, hypoproteinemia and even death [4]. In sheep, *Oesophagostomum columbianum* induces a knotty gut or pimply gut [5, 6] which causes intestines to be partially or completely rejected during meat inspection [7, 8].
It also differs from other nematodes in that L4 larvae remain in nodules that are growing around them [9] and are primarily responsible for pathogenicity. The present case study describes Oesophagostomiasis in a goat by gross lesions and microscopic lesions.

Case history and Observation
A male goat with an approximate weight of 25 kg was presented for post-mortem examination. The history of the goat revealed by the farmer was poor appetite and diarrhoea for 10 days. Upon the external post-mortem examination, the condition of the goat was emaciated with a pale conjunctival mucous membrane.

Material and Methods
Necropsy of the goat was conducted and various gross lesions were recorded in different organs. For histopathological examination, samples from intestinal caeca showing nodular lesion were fixed in 10% neutral buffered formalin, dehydrated in ascending grade of alcohol and embedded in paraffin. Tissue sections of 5-6u thickness were prepared by using microtome and stained with routine Haematoxylin and Eosin method (H & E) to study the microscopic lesions [10].

Results and Discussion
Gross and Microscopic Lesions
Post-mortem examination revealed that the animal was emaciated with pale visible mucous membrane and subcutaneous tissue (Fig 1). On opening the abdominal cavity, straw-coloured fluid was observed. The Liver was slightly firm. Large intestine (Caecum and Colon) revealed multifocal (50 to 60 in number) raised, round, grey-coloured nodules on the serosal layer varying in size from 0.3 to 0.5 cm in diameter throughout the length (Fig 2 & 3). On cut section of the nodule revealed yellowish necrotic content. The mucosa of the large intestine showed haemorrhages. Corticomedullary junction of the kidneys showed congestion. Both the lungs were pale. The Heart was congested and accumulated with the clot. In this investigation, the gross lesions were correlate with those seen in Kumar *et al.* 2014 [11] and Satish *et al.* [12].

Histopathology of the large intestine displayed parasitic nodules with a central core of eosinophilic necrotic region (Fig 4) was infiltrated by inflammatory cells and also encircling with fibrous tissue (Fig 5 & 6). The Mucosal and muscularis layer showed necrosis of epithelial cells with haemorrhages and infiltration of inflammatory cells (Fig 7). These microscopic lesions were correlate with the findings of Kumar *et al.* 2014 [11] and Satish *et al.* [12].

Fig 1: Emaciated goat carcass

Fig 2: Large intestine: Caecum and colon showing multifocal raised, round, grey coloured nodules on serosa

Fig 3: Large intestine: Serosa of caecum and colon showing grey coloured nodules and congestion of mesentery

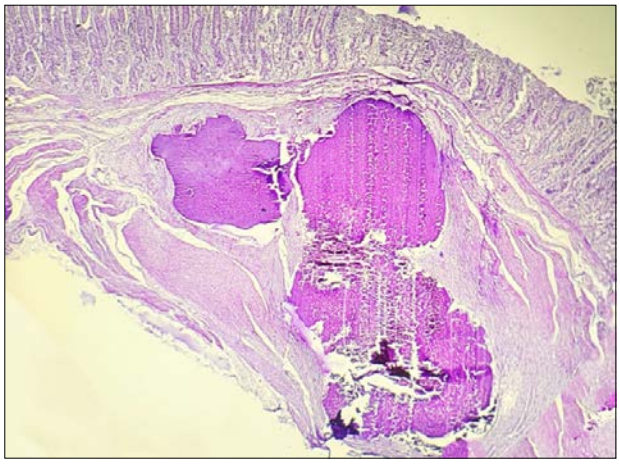

Fig 4: Large intestine (caecum): Section showing central core three eosinophilic necrotic regions in the muscularis layer of the caecum H&E, 40x

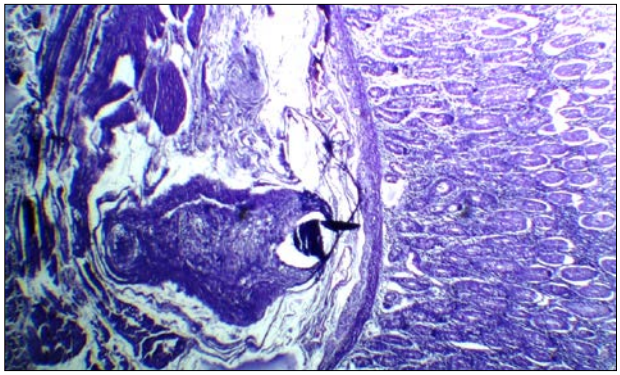

Fig 5: Large intestine (caecum): Section showing central core of necrotic debris surrounded with fibrous connective tissue and inflammatory cells H&E, 100x.

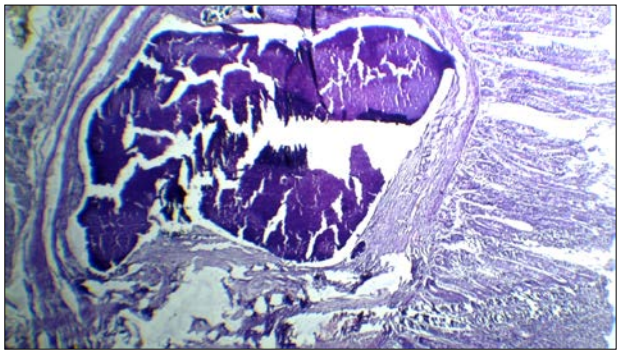

Fig 6: Large intestine: Section showing central core of eosinophilic necrotic region and necrosis of villi. H&E, 100x.

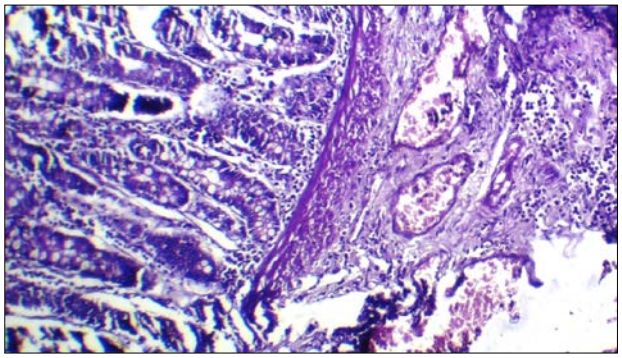

Fig 7: Large intestine: Mucosa and muscularis layer: Section showing congestion, haemorrhages and infiltration of inflammatory cells. H&E, 400x

Conclusion

Based on post-mortem findings, characteristic histo-pathological observations, the case was successfully diagnosed as oesophagostomiasis in a goat and the animal may have died due to severe infestation leading to anaemia and hypoproteinemia.

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