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## Occurrence and histopathology of pulmonary parasitic infection in goats

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#### Abstract

Pulmonary parasitic infections in goats are of considerable economic importance. The parasites cause chronic production losses as a result of reduced food conversion ratio (FCR) and weight gain. The present investigation was carried out from March 2019 to December 2019. During this period, a total number of 630 specimens of lower respiratory tract samples of irrespective of age, sex and breeds were examined. Out of these representative samples 363 lower respiratory tract samples showed gross lesions, which were subjected to histopathological examinations. Lung examination revealed that 6 (1.65%) animals were infected with pulmonary parasites irrespective of age and sex. In this study, 1.65% lungs affected with mularis worm.

**Keywords:** Goat, parasite, occurrence, lower respiratory tract, mularis worm

#### Introduction

Globally, India occupies second position in goat population and first position in terms of goat milk production. Total goat population in the country is 148.88 million and in Rajasthan 20.84 million. About 27.7% of the total livestock is contributed by goat (livestock census 2019). Respiratory infections are most commonly found in goat flocks, affecting groups or individual. The lower respiratory tract consists of trachea, bronchi and lungs. Pneumonia in goats is associated with a wide range of infectious agents. Adverse weather conditions, stress, pregnancy, lactation, immunosuppression, and old age of animals favours the infection by normal inhabitants of the respiratory tract. (Dadhich, 1996; Kumar et al., 2014) [5, 6] Livestock is one of the important subsectors of agriculture and plays an important role in the economy of India.

#### Materials and Methods

The study was conducted from March, 2019 to December, 2019 at slaughter houses and meat outlets of Jaipur. The tissue specimens were also collected from the carcasses of goats submitted to the department of Veterinary Pathology, College of post graduate institute of veterinary education and research (PGIVER), Jaipur for post mortem examination. Sampling was done from the affected lung and 0.5 cm thick lung tissues were collected in 10% NBF. For histopathological processing, the tissue samples were given overnight washing in tap water and dehydrated in increasing grades of ethyl alcohol, cleared in xylene and embedded in paraffin. From paraffin embedded tissue blocks, 4-5µm thick tissue sections were cut on clean, grease free glass slides and haematoxylin and eosin staining was done. Then sections were examined under the light microscope for histopathological evaluation of tissue.

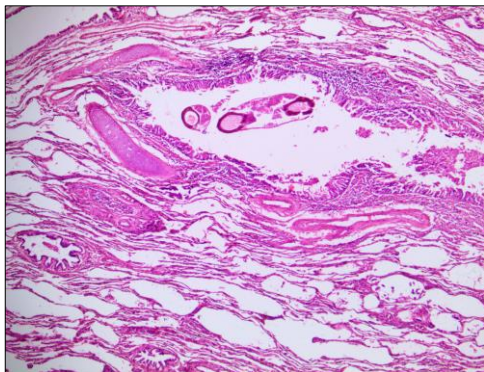
#### Results and Discussion

Parasitic condition was recorded 1.65 per cent (6 out of 363) of the total affected of sample. Grossly, the number of roughly circular, grey coloured, slightly elevated, hard nodules present on lung surface. Microscopically, emphysematous areas were seen in affected lung. Worms in bronchioles were associated with a chronic catarrhal-proliferative bronchiolitis. Bronchiolar epithelium was hyperplastic and there was some lymphoid hyperplasia in the submucosa and Lamina propria. Affected part of lung was seen necrosed and alveolar walls were ruptured with infiltration of, giant cells, neutrophils, macrophages with a heavy eosinophils. Mild exudation of fibrin accumulated in alveoli and bronchioles.

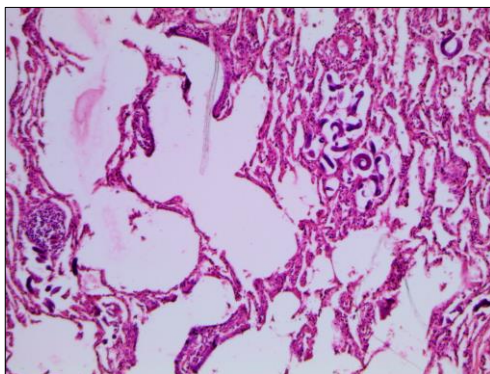
In some sections showed longitudinal cut view of parasite having two round suckers in bronchiole with developmental stages along with eosinophilic infiltration with some exudates and emphysematous alveoli. Lung section showed alveoli were packed with groups of eggs and egg granuloma, different developmental stages of lung worms (mularis) along with eosinophilic infiltration. In some areas alveoli are packed with adult lung worms (mularis) along with eosinophilic infiltration characteristic emphysema along with in foetelization of lung. in large area were present. The above findings are in concurrence with observation of Mishra *et al.* (2018)<sup>[2]</sup>.



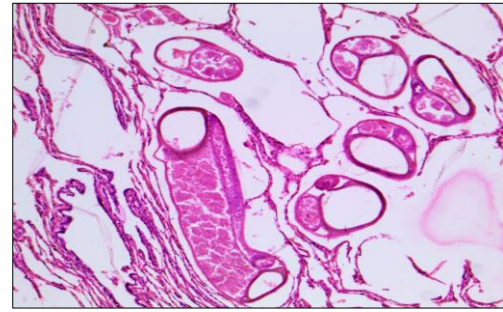
**Fig 1:** Gross photograph of lung having parasitic pneumonia



**Fig 2:** Microphotograph of lung section showing longitudinal cut view of parasite having two round suckers in bronchiole with some exudate, emphysematous alveoli with developmental stages along with eosinophilic infiltration. H&E 40X.



**Fig 3:** Microphotograph of lung showing alveoli are packed with lung worms (*mularis*) around with eosinophilic infiltration forming granulomatus changes characteristic emphysema along with in foetelization, H&E 100X.



**Fig 4:** Microphotograph of lung showing alveoli are packed with adult lung worms (*mularis*) along with eosinophilic infiltration H&E 100X.

### Conclusion

Out of these representative samples 363 lower respiratory tract samples showed gross lesions, which were subjected to histopathological examinations. Lung examination revealed that 6 (1.65%) animals were infected with pulmonary parasites irrespective of age and sex. In this study, 1.65% lungs affected with mularis worm.

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