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## Incidence of *Haemonchosis* in a non-descript goat farm in Ramanathapuram District

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**Abstract**

A Non-descript goat unit with the stock strength of 40 animals managed under semi-intensive system of rearing was reported to have acute mortality during the month of December 2019, rainy season in Tamil Nadu. Among the total strength of 40 goats, 2 numbers of buck in the age group of 5 months were succumbed to death within a week. It was reported that all the ailing animals showed inanition, reduction in weight and bodily condition and diarrhoea. Post mortem examination revealed debilitated carcasses with blanched visible mucus membrane and thin and pale muscles. Clear, straw coloured, thin fluid found in the abdominal cavity. All the visceral organs were pale. The abomasal contents were fluidal and sometimes mixed with free blood with large number of white coloured hairy nematodes morphologically indistinguishable from *Haemonchus contortus*. There were a few ulcerative haemorrhagic spots seen on the abomasal mucosa where the parasites found adhered. The microscopic examination of the sediment of the intestinal content revealed numerous eggs morphologically indistinguishable from the ova of *Haemonchus contortus*. The microscopic examination of the worms confirmed as *Haemonchus contortus*. The remaining goats in the flock were treated with suspension of Triclar® (Triclabendazole 50 mg and Ivermectin IP 1 mg) orally at a dose rate of 1ml/ 5kg body weight, single dose and advised supplementation of multivitamin and minerals 3 days after the deworming. The farmer was also advised for rotational deworming once in every 3 months to overcome anthelmintic resistance. The goats recovered completely after deworming.

**Keywords:** Non-descript Goat, semi-intensive rearing, mortality, *Haemonchus contortus*, deworming

**Introduction**

Sheep and goats are the earliest ruminants to be domesticated and can withstand under varied drought conditions with the available pastures and limited water resources, which cannot be used by other livestock [20]. Helminths infection is a major problem of concern with small ruminants especially grazing on pasture contaminated with third stage infective larvae of parasitic nematode [2]. Commonly occurring gastrointestinal parasitic diseases in goats and sheep are *Haemonchosis*, *Ostertagiasis*, *Strongyloidosis*, *Oesophagostomiasis*, *Bunostomiasis* and *Trichostrongylosis*. Among the nematodes, *Haemonchus contortus* is the most important parasites affecting the small ruminant population creating recurring losses in productivity due to widely prevalent nature of sub-clinical infection and the pattern of anthelmintic resistance by these parasites in most parts of the world [4].

*Haemonchus contortus* is a blood sucking parasite, found in the abomasum of sheep and goat causes significant blood loss. Each worm sucks 0.05 ml blood per day resulting anaemia, loss of body weight and wool growth ultimately leading to production loss and increased mortality in infected animal [21]. According to [14], *Haemonchus contortus* which also known as 'barber pole' worm is the most pathogenic nematode where individual females are capable of producing thousands of eggs per day that can lead to rapid larval pasture contamination and associated outbreaks of *Haemonchosis*. *H. contortus* infection can be manifested as acute or chronic disease where the main clinical signs observed during acute condition are haemorrhagic anaemia, dark coloured faeces, oedema, weakness, reduced muscle mass or sometimes sudden death occur where else in chronic condition decreased food intake, weight loss and anaemia are the most common clinical signs observed [1, 5].

In this case report the author describes the incidence of an acute case of *Haemonchosis* in a non-descript goat farm at Ramanathapuram district.

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## Materials and Methods

### Materials

The dead animals from the commercial unit of sheep and goat farm managed under semi-intensive system of rearing at Pothuvakudi village of Paramakudi taluk, Ramanathapuram district, anamnesis shared by the farmer, information acquired by post-mortem examination and data generated during on farm investigation were serving as the materials for this study.

### Methods

The lesions found in the 5 month old non-descript male goat carcass on post-mortem examination was recorded along with the anamnesis received from the farmer. The parasites lodged in the abomasum were macroscopically examined and preserved in 10% formalin for microscopic examination. The intestinal content was collected and examined under microscope as per [19] for the demonstration of parasitic eggs using sedimentation technique. The worms preserved in 10% formalin were cleared and examined under microscope for species identification as per the methods described by [19]. On-farm investigation was done to study the management practices being followed in the farm and to assess the predisposing factors in the farm premises. The details on general management were collected. The conditions around the farm were noted down. The information on the onset, course and pattern of death were collected.

### Results and Discussion

Among 40 goats, 2 Nos (5%) were succumbed to death within a week. The mortality occurred in this study was primarily due to malnutrition rather than parasitism. [12] stated proper nutrition can increase the ability of the host's resistance by limiting the establishment, growth rate and parasite population and where else poor nutrition reduces the ability of the host immune system to counter the effects of parasitism. The buck, in this case, had severe malnutrition and may be aggravated by *H. contortus* infection. The poor bodily condition of the buck might be due to continuous diarrhoea resulted in loss of vital nutrients that help in rejuvenation of the body and subsequent weight gain and lead to the leakage of plasma from the intestine that resulted in hypoproteinaemia and hypoalbuminaemia that were observed in this case [1]. The goats maintained in the farm were under semi-intensive system of rearing and had exposure to grazing land outside the farm premises and had opportunity to graze the meadows together with sheep population might had acquired the infection and the mortality was recorded during the month of December 2019. The heavy rainfall in this area during might have acted as the predisposing factor. [15] reported that *Haemonchus* was the most common nematode seen in grazing animals and recorded a higher source of infection during hot humid season. Similarly, [13] stated that overcrowding, lush pasture, hot and humid weather and a low plane of nutrition act as predisposing factor for *haemonchosis*. [19] and [21] opined that self cure phenomenon in *haemonchosis* is an inducing factor acquired by the acquisition of large number of infective larvae developed in the pasture after heavy rainfall. In this study, the infection might be acquired due to lush green pasture, hot and humid weather, low plane of nutrition and a recent heavy rainfall.

The carcasses were debilitated in condition with pale skin and

blanched, thin muscles. This might be due to the lesser availability of balanced ration and also due to intense parasitism and anaemia. The visible mucous membranes were pale to papery white in colour. There was presence of clear, straw coloured fluid in the abdominal cavity. All the visceral organs were pale. The abomasal contents were fluidal and sometimes mixed with free blood with large number of white, hairy nematodes morphologically indistinguishable from adult *Haemonchus contortus* parasites. There were a few ulcerative haemorrhagic spots seen on the abomasal mucosa where the parasites found adhered. Presence of petechiae in the mucosa and hyperaemia of the mucosal folds of the abomasum were similar with the earlier observations [3, 10]. Anaemia accompanied by hypoproteinaemia and oedema is the cause of death in *Haemonchosis* which was in confirmation to the findings of [19, 18] reported the involvement of liver, lungs, spleen in addition to abomasum and intestine. Similarly, [6] also reported a similar type of lesions associated with *haemonchosis* and added that death was due to respiratory and circulatory system failure because of pulmonary oedema and hypoxia as a result of hypoalbuminemia and anaemia caused by severe *Haemonchus contortus* infection and malnutrition. The microscopic examination of the sediment of the content from intestine revealed the presence of *H. contortus* eggs which were determined based on their characteristic shape, dark brown blastomeres, and body dimensions (Fig. 1) as described by [8]. Macroscopically the parasites had a striking reddish appearance due to its blood feeding habit. The female is longer (18 to 30 mm) than the male (10 to 20 mm). Microscopically, the male worm possesses a relatively developed copulatory bursa, with an asymmetric dorsal lobe and a Y-shape dorsal ray (Fig. 2). The female worm revealed the presence of mouth parts and lips in the anterior end (Fig. 3), mid portion revealing numerous eggs in the uterus (Fig. 4), vulvar flaps (Fig. 5) situated in the posterior third of the body. The vulvular lips are inconspicuous but a linguiform process is invariably present and is covered with valves. The posterior end of female worm showed the tail portion without a spine (Fig. 6) and agreed with the description of [17] and [19].

The affected flock was dewormed with the suspension of Triclar® (Triclabendazole 50 mg and Ivermectin IP 1 mg) orally at a dose rate of 1ml/ 5kg body weight, single dose which yield a good result of recovery in all the affected flocks and the mortality stopped. Similarly, [11] and [16] reported combined treatment of ivermectin and albendazole was more effective against *H. contortus* infections. The use of anthelmintic drugs has been followed as a standard practice for the control of *H. contortus* in ruminants for decades [9]. However the efficacy of this method has been seriously curtailed by the development of anthelmintic drug resistance in the world over. This has necessitated the development of alternative techniques such as rotation of anthelmintic class of drugs [7]. Meanwhile, [3] suggested that anthelmintic treatment on quarterly basis may be implemented to lower down the parasitic load as well as mortality in a goat farm due to *Haemonchosis*. The farmer was advised to provide good ration with supplementation of vitamins and minerals. The farmer was also advised to follow rotational deworming strategy once in every three month. The mortality was completely controlled and the flock was showing good signs of health.



**Fig 1:** *Haemonchus contortus* eggs



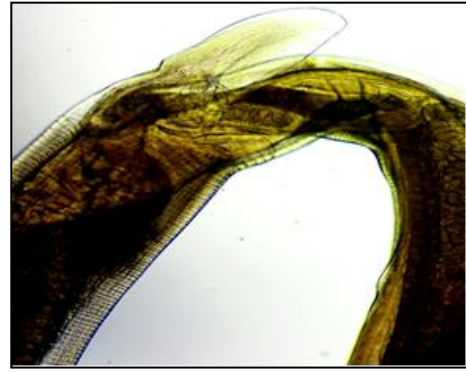
**Fig 2:** *Haemonchus contortus* – Male posterior having copulatory bursa with inverted ‘Y’ shaped dorsal ray in dorsal lobe having two barb spicules



**Fig 3:** *Haemonchus contortus* – Female anterior end showing lips and mouth parts



**Fig 4:** *Haemonchus contortus* - Female mid portion revealing eggs in uterus



**Fig 5:** *Haemonchus contortus* – Female worm showing vulvar flab



**Fig 6:** *Haemonchus contortus* – Female worm posterior end

### Conclusions

The mortality due to *Haemonchosis* in the farm could be attributed to the insufficient grazing land in relation to the stock density. Keeping in view some control measures for gastrointestinal parasites can be undertaken to reduce the intensity of parasitic infection. Moreover, the strong influence of season is a favourable factor to be considered for taking the prophylactic measures. During rainy season, factors like temperature and humidity are suitable for the development and survival of the parasite. It is therefore suggested that rotational deworming of the flocks on a quarterly basis may be implemented to lower down the parasitic load as well as mortality.

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### Conflict of interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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