Survey of helminth infections in Sheep (*Ovis aries.* L 1758*)* at Puthanampatti area of Trichy district, Tamilnadu, South India

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Abstract: A survey was carried out on helminth infections of sheep in Puthanampatti village (N11^{o} 03.845'; E078^{o} 41.007') between December 2016 and April 2017. The result revealed that eight types of helminth eggs were identified, viz., *Strongyle* sp., *Strongyloides* sp. *Ancyclostoma sp.*, *Ascaris* sp, *Taenia* sp, *Trichuris* sp, *Diphyllo bothriurp*, and *Ostertagia circumcincta.* The number of *Strongyle* eggs increased significantly with increased age of the sheep. The adult male and adult female of sheep showed 100% infection of various endoparasites. As evidenced by the results, the most frequent nematode species such as *Ascaris* sp. (32.29%) and *Strongyle* sp (29.96%). *Strongyloides sp.* (12.06%) was moderately frequented. *Ancylostoma* sp. (2.33%) and *Trichuris* sp. (1.55%) were frequented low. Five helminth species were recovered from the adult male viz., *Strongyloides sp*., *Strongyle sp*., *Ascaris sp*., *Taenia sp. and Ostertagia circumcincta.* In the case of adult female 8 species of endoparasites were recorded viz., *Strongyloides sp*., *Ancylstoma sp*., *Strongyle sp*., *Ascaris* sp., *Taenia sp. Diphyllo bothriurp and Ostertagia circumcincta*.

Key words- Helminth infections, sheep, Puthanampatti, Trichy district, South India

1. INTRODUCTION

India has a population of 200 million cattle, 76 million buffaloes, 110 million goats, 46 million sheep and 275 million poultry, besides other livestock population reared in diverse agroclimatic conditions [Anonymous, 1997]. Sheep contribute great effort to human to meet his needs like protein, fur and excreta as manure. Gastrointestinal nematodes of Trichostrongylidae family are perhaps the most important parasites of small ruminants worldwide, causing significant morbidity and loss of production [Pawel *et al*., 2004]. Helminth parasites made their impact on the livestock in the developing countries [Over *et al*., 1992]. The flukes cause many diseases to domestic animals [Anon, 1994]. Common parasites of sheep and goat include coccidian, roundworms, tapeworms, and liver flukes. Detailed knowledge of the parasitic community is desirable.

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At its simplest, the presence of parasites provides information about the spatial and tropic relationships of the host [Kennedy, 1968].

Egg output is considered to be an accurate indicator of parasite biomass because of its positive correlation with worm size and number. The indirect method of pellet analysis has limitations, being non-invasive it is useful in domestic sheep and goat.

Much information is availed in the literature with regard to parasitic infections of goat in the country where their numbers are declining steadily all over the world. It is hoped that the parasite investigations will lead to greater understanding and better management benefiting the goat and other wild animals in India. Egg count is important in estimating the worm burden and to determine the light, medium and heavy infection. The egg and daily egg output gives an indication of the worm burden.

Quantitative and qualitative assessment of eggs in the faeces has been widely used to determine the degree of pasture contamination with helminth eggs [Sathyanarayana and Ramesh, 1995]. It is unknown that many endo parasites are living in the intestine of sheep all over the world. Details of helminth infections of sheep in Puthanampatti village is not known well so far. In order to get detailed information on this aspect, an investigation has been carried out at Puthanampatti village and it is very clear that a study is essential in this aspect to compare data among species.

2. STUDY AREA

The present study was carried out in Puthanampatti village (N11° 03.845′; E078° 41.007′) which is approximately 3Km² area. Puthanampatti village is located about 30 km away from the Rock City – Trichy. In Puthanampatti village 65% of population is rural and depends directly on agriculture and animal Husbandry. This area is experienced arid to semi arid climate. Topography of the area is mostly flat with slight undulating. Puthanampatti village is dominated by human habitation, agricultural lands; government owned waste lands, forest monoculture plantations. The livestock are allowed free land for grazing and browsing. The people excrete in the open area so that the contamination of helminth infection to the livestock may possibly occur frequently. The temperature ranged from 32.0º C to 41.0º C in summer and 15ºC to 25ºC in winter.

3. MATERIALS AND METHODS

It is easy to identify a faecal sample of Herbivore from that of omnivore or a carnivore. The dung of herbivores will contain lot of vegetable fibers. The color of the dung under normal conditions will be dark greenish yellow with a peculiar aromatic smell. In the present investigation direct examination method was attempted [Soulsby, 1982]. Pellet collection (faecal material of sheep) was carried out in the sheep pen in the Puthanampatti village during the study period. The sheep pens were visited in the morning hours (0600 – 0700 am) and the fresh pellets were collected in different age and sex classes. Five samples were collected on each sex (Adult male and adult female). Once the execration of pellets were noticed from individual sex, immediately the droppings were collected and preserved in the polythene bags with all details such as date, place, age and sex, pellet status (intact pellet or liquid manner). The samples were brought to the laboratory and they were weighed age and sexwise. Thereafter, the pellets were transferred in the plastic bottles which contain 4% formaline. Apart from this, the number of droppings of individual goat of different age and sex classes per day was also obtained by following the individual goat from morning 0900 to evening 0500 and defecation per day was enumerated. The same trend was followed for another sex in the next day. Likewise the all age and sex classes' defecation rate per day was estimated.

3.1 Detection and recovery of Eggs

The faecal samples are the most important because the eggs of all Gastero intestine helminthes larvae come out from body through the faeces. Negative results need not necessarily means that the animals are worm-free. No eggs will be found if worms are still immature or if only males are present and if the host animals do not harbor the helminthes infections. Fresh faecal sample is collected and the following different methods are adopted for feacal examinations.

3.2 Direct examinations

A small quantity of faeces (about the size of the pins head) was placed on a glass slide along with 3 to 4 drops of water. The faecal sample was thoroughly emulsified with a needle. The sample was evenly spread over the slide and placed a cover slip on the sample and examined under a microscope. A few slides (5) were examined from the same faecal sample to come to a conclusion as lighter infections may escape from the observer notice. This method is suitable for very rapid examination. The ova of parasites are identified from their morphological features [Soulsby, 1982]. The identification of these parasites was made by using keys "Systema Helminthum" [Yamaguti, 1961].

4. RESULTS AND DISCUSSION

In the present investigation eight types of helminth eggs were identified, viz., *Strongyle* sp., *Strongyloides* sp. (belonging to the large group of Strongylidae nematodes plus *Trichostrongylus axei* eggs), eggs of *Ancyclostoma sp.*, *Ascaris* sp, *Taenia* sp, *Trichuris* sp, *Diphyllo bothriurp*, and *Ostertagia circumcincta* (Table 1). The number of *Strongyle* eggs increased significantly with increased age of the sheep. The results of the present study indicate that the incidence of infection was normal. The adult male and adult female showed 100% infection of various endoparasites. The various species of nematodes recovered during this investigation had already reported by various researchers in different parts of the world [Ahmed and Ansari, 1987; Asanji and Williams, 1987; Guiomaraes and Walter, 1987; Njau, 1987; Uriarte and Valderrabno, 1989; Pal RA and Qayyum, 1993]. Keeping in view the findings are in accordance with the opinion of earlier work who reported that the climate, grazing of young and adult animals together on poorly drained land and over-stocking of animals, provide ideal condition to build up clinical infections in the host [Gupta, 1987]. While higher percentage of single infection in sheep and Goat (55.83%) and (21.17%) were mixed infection were already recorded [Sanyal, 1998].

Table1. Age and sex of the host (sheep) and parasite infection

Sheep Age and	Total number of sample	Total number of sample	%

sex	examined	infected	
Adult male	**5**	**5**	**100**
Adult female	**5**	**5**	**100**
Overall	**10**	**10**	**100**

4.1 Identification of parasites egg

As evidenced by the results, the most frequent nematode species were *Ascaris* sp. (32.29%) and *Strongyle* sp (29.96%). *Strongyloides sp.* (12.06%) was moderately frequented. *Ancylostoma* sp. (2.33%) and *Trichuris* sp. (1.55%) were frequented low. Five helminth species were recovered from the adult male viz., *Strongyloides sp., Strongyle sp., Ascaris sp., Taenia sp. and Ostertagia circumcincta*. However, in the case of adult female 8 species of endoparasites were recorded viz., *Strongyloides sp., Ancylstoma sp., Strongyle sp., Ascaris* sp., *Taenia sp. Diphyllo bothriurp and Ostertagia circumcincta*. Earlier higher incidence of mixed infection (22%) and higher percentage of single infection in sheep and goat (55.83%) and (21.17%) were mixed infection were recorded [Spall, 1998.]. The prevalence of gastrointestinal parasites, the genera of helminth parasites, species and the severity of infection also vary considerably depending on local environmental conditions such as humidity, temperature, rainfall, vegetation and management practices. Climatic conditions are responsible for the distribution and the prevalence of the disease.

4.2 Host Parasite Relationships

In the case of adult male single infection was not recorded and double infection, Triple infection, Quadruple infection, Quintuple infection were observed. On the contrary, in the case of adult female's single infection, double infection, Triple infection, Quadruple infection, Quintuple infection, Sextuple infection and Septuple infection were recorded.

4.3 Adult male

Single Infection: The single infection was not recorded in all age and sex classes. **Double Infection:** The combination of *Ostertagia circumcincta + Ascaris (N=1) ; Strongyle + Ascaris (N=2)* was recorded. **Trible Infection:** The following composition of helminth infection viz., *Strongyloides + Strongyle + Ascaris* (N=2) ; *Strongyloides + Ostertagia circumcincta + Strongyle (N= 1); Strongyle + Ascaris + Taenia (N= 1) and Ostertagia circumcincta + Strongly + Ascaris (N= 3) were recorded.* **Quadruple Infection:** Adult male showed the following combination of Strongyloides + *Ostertagia circumcincta + Strongyle + Ascaris* (N=6) ; *Taenia + Ostertagia circumcincta + Strongyle + Ascaris* (N=1). **Quintuple Infection:** The adult male showed the following composition Strongyloides + *Ostertagia circumcincta + Stronglye + Taenia + Ascaris* (N= 1).

4.4 Adult female

In the case of adult female single infection, double infection, Triple infection, Quadruple infection, Quintuple infection, Sextuple and Septuple infections were observed. **Single Infection** : The single of *Ascaris sp* (N=2) was recorded in the case of adult female. **Double Infection:** The combination of *Strongyle + Ascaris (N=2)* was recorded. **Trible Infection:** In the case of adult female the following composition were recorded viz., *Strongyle + Ascaris + Taenia (N=3) ; Strongyle + Ascaris + Diphyllo bothriurp (N= 2) ; Strongyloides +Strongyle + Ascaris (N= 2) ; Strongyle + Ascaris + Trichuris (N=1).* **Quadruple Infection:** In the case of adult female the following composition were recorded viz., *Strongyloides + Strongyle + Ascaris + Taenia* (N=3) ; *Strongyle + Ascaris + Taenia + Diphyllo bothriurp (N= 1) ; Ostertagia circumcincta + Strongyle + Ascaris + Diphyllo bothriurp (N= 1).* **Quintuple Infection:** In the case of adult female the following composition were recorded viz., *Strongyloides + Strongyle + Ascaris + Ancyclostoma + Diphyllo bothriurp* (N=1) ; *Strongyloides + Strongyle + Ascaris + Trichuris + Diphyllo bothriurp (N= 1)* and *Ostertagia circumcincta + Strongyloides + Strongyle + Ascaris + Diphyllo bothriurp (N= 1).* **Sextuple Infection:** In the case of adult female the following composition were recorded viz., *Strongyloides + Strongyle + Ascaris + Ancyclostoma + Diphyllo bothriurp + Taenia* (N=3) ; *Strongyloides + Strongyle + Ascaris + Taenia + Trichuris + Diphyllo bothriurp (N= 1).* **Septuple Infection:** In the case of adult female the following composition were recorded viz., *Strongyloides + Strongyle + Ascaris + Ancyclostoma + Diphyllo bothriurp + Taenia + Ostertagia circumcincta* (N=1) and *Strongyloides + Strongyle + Ancyclostoma + Ascaris + Taenia + Trichuris + Diphyllo bothriurp (N= 1).*

The present investigation expressed that the eggs/adults of digenetic trematodes and cestodes were not found in the sheep at Puthanampatti village. This should be conformed in the future. Earlier, the presence of digenetic trematodes, Carymerius, gregarious gastrothylas crumenifer, Paramphistomum gotoi, Homologastes palaniae, Fasciola magna and cestodes Avitallina centripunctat, moniezia expansa, Thysanosoma acti-nioides, Taenia hydatigena and multiceps sp recovered in blackbucks [Spall, 1998.]. The absence of dignetic trematodes in sheep in Puthanampatti village is evidenced by the absence of suitable gastropod snails. The major problem in Puthanampatti village is the domestic cattle. Though the cattle grazing are allowed legally inside different

habitats, the cattle share pastures with sheep and goat at Puthanampatti village. These cattle play a significant role in the disseminating number of parasites to the sheep, goat and other wildlife inhibiting in this area.

CONCLUSION

Periodical vaccination programmes to the livestock may be implemented in Puthanampatti village. The worm load to be checked up periodically. Good hygienic process may be implemented every sheep and goat pen. Parasite transmission from cattle to be monitored. Awareness programmes may be brought to the villagers. Awareness programmes may be brought to the schools and colleges with regard to parasitic infections from sheep and goat. To avoid open defecation by human to be implemented at Puthanampatti village.

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