

Research Article

PREVALENCE OF SMALL RUMINANT LUNG-WORM INFESTATION IN TABRIZ CITY, IRAN

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ABSTRACT

Lungworms can result an infection of the lower respiratory tract, usually resulting in verminous bronchitis or verminous pneumonia. The aim of this study was assessment of sheep and goats contamination to lungworms of Tabriz city in Iran in 2013. In this study initially with referring to Tabriz abattoir were selected rejected and apparently healthy lungs by randomly and then sent to parasitology laboratory of veterinary faculty of Tabriz branch, Islamic Azad university. In lab, lungs were opened and contents were isolated. Then with staining of parasites and creating of slides, type of parasite was detected by light microscope. Of 200 collected lungs, were infected 26 cases (13%) to hydatid cyst, 112 cases (56%) to *Dictyocaulus filaria*, 35 cases (17.5%) to *Protostrongylus rufescens* and 12 cases (6%) to *Muellerius capillaries*. also 5 cases (2.5%) of 160 sheep lungs were infected to *Linguatula serrata* larva. with attention to relatively high contamination rate in Iran, exerting of prevention and treatment measures was recommended.

Key words: *Small Ruminant, Lung-Worm, Tabriz, Iran.*

INTRODUCTION

Small ruminants are important domestic animals in tropical livestock production systems (Eslami, 1997). They play a great role in food supply, a source of income and foreign currency (Eslami, 1999). However, the economic gains from these animals remain insignificant when it is compared to their huge number. This low productivity is a reflection of disease, limited genetic potential and husbandry standard (Etminani, 1980). Helminthes of ruminants are ubiquitous and many tropical and sub-tropical environments in the world provide nearly perfect conditions for their survival and development. Lungworms can result in infection of the lower respiratory tract, usually resulting in verminous bronchitis or verminous pneumonia (Gorski *et al.*, 2004). Lungworms are Protostrongylids and *D. filaria*. Protostrongylids are heteroxenous parasites that infect terrestrial mollusks as intermediate host (Gorski, 2004). Whereas *D. filaria* has a direct life cycle (Imari, 1962).

Small ruminant's lungworms with waste and losing of livestock productions cause significant damages (Maraqa, 2005 and Nematollahi, 2009). *Dictyocaulus filaria*, *cystocaulus ocreatus*, *Protostrongylus rufescens* and *Muellerius capillaries* are responsible to these damages (Sami *et al.*, 1984 and Uriarte, 1985). Most of done observes and studies are based on detection of contamination to sheep and goats lungworms in Tabriz according to fecal experiments and abattoir assessments (Nematollahi and Moghaddam, 2009).

The aim of this study was assessment of sheep and goats contamination to lungworms of Tabriz city. In this study initially with referring to Tabriz abattoir were selected rejected and apparently healthy lungs by randomly and then sent to parasitology laboratory of veterinary faculty of Tabriz branch, Islamic Azad University.

MATERIALS AND METHODS

This study was done in 3 steps as follow:

Collection of lungs, work on lungs and work on parasites.

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Collection of Lungs

For 6 month in 2013 with referring to Tabriz abattoir rejected sheep and goats lungs for 150 samples and apparently healthy lungs for 50 samples were selected by randomly and were located into plastic packages and sent to parasitology laboratory of veterinary faculty, Tabriz branch Islamic Azad University.

Work on Lungs

In this study we cut the lungs from trachea and then washed opened lungs with water and contents were collected in the basin and then were screened with number 60 and 100 sieves, then remaining contents transported to other bottle with formalin 5% and finally labeled. Of course, before opening of lungs, the lungs were evaluated from existence of hydatid cyst and other nodules.

Work on Parasites

Parasitic samples were collected in glass containers containing 5% formalin for staining for the final diagnosis. Thus, the lactophenol and azo carmine was used for temporary staining and carminic acid & alcohols 50, 70, 80, 90, and 100% for permanent staining. The samples were carefully evaluated using a microscope. The keys in the Schmidt's book were the reference for identifying gender and species of parasites.

RESULTS AND DISCUSSION

From 160 sheep and 40 goats assayed lungs these results were achieved as follow:

Of 200 total lungs, 26 cases (13%) were infected by hydatid cyst, of 160 sheep lungs, only 5 cases (2.5%) were infected by *Linguatula serrata* larva.

Among nematodes, totally 3 species were isolated as follow:

Of 200 total lungs, 112 cases (56%) were infected by *Dictyocaulus filaria* which is includes highest infection rate. of 200 total lungs, 35 cases (17.5%) were suffered from *Protostrongylus rufescens* and finally, of 200 total lungs, 12 cases (6%) were infected by *Muellerius capillaries* (Table 1) and (Figure 1-3).

Table 1: Type and number and percentage of found parasites in sheep and goats lungs

| Parasite | Sheep = 160 samples (%) | Goats = 40 samples (%) | Total = 200 samples (%) |
|----------------------------------|-------------------------|------------------------|-------------------------|
| <i>Hydatid cyst</i> | 22 (11%) | 4 (2%) | 26 (13%) |
| <i>Linguatula serrata</i> | 5 (2.5%) | 0 (0%) | 5 (2.5%) |
| <i>Dictyocaulus filaria</i> | 83 (41.5%) | 29 (14.5%) | 112 (56%) |
| <i>Protostrongylus rufescens</i> | 27 (13.5%) | 8 (4%) | 35 (17.5%) |
| <i>Muellerius capillaries</i> | 8 (4%) | 4 (2%) | 12 (6%) |

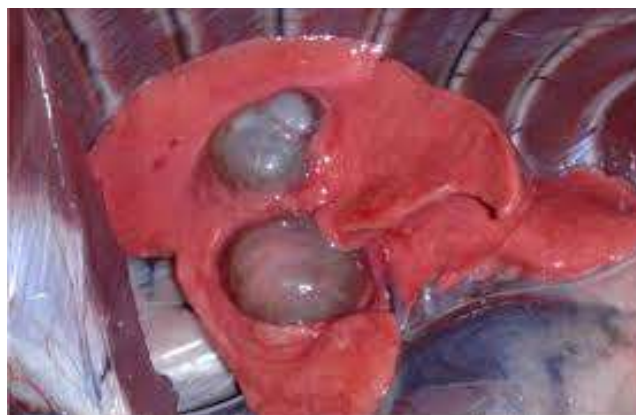


Figure 1: Hydatid cyst in lung

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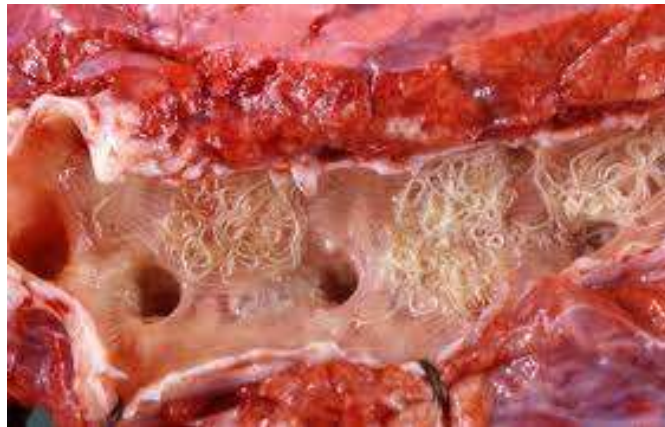


Figure 2: Dictyocaulus filaria in lung



Figure 3: Linguatula serrata Isolated from lung

Discussion

In one study carried out by Uriarte *et al.*, (1985) on ewe revealed that prostrongyloides family monopolized highest contamination and among this family cystocaulus with 24.6% had maximum prevalence, after it, Protostrongylus, Muellerius capillaries and Neostrongylus with 12.8 and 9 and 8.8% occupied in next classes, respectively. In one other study were done by Gorski *et al.*, (2004) in Poland demonstrated that of 400 experimental sheep samples, prevalence rate to Muellerius capillaries in polish mountain colored sheep, polish mountain sheep and Kamieniec sheep races were 4.6 and 4.5 and 2.5 percent respectively. Also in other research carried out in Poland by same researcher (Gorski *et al.*, 2004) delineated that in total, incidence rate in goats is very high than sheep as well as demonstrated that infection rate to fasciola hepatica was 10.9% and infection to tapeworms in sheep is very high than goats but infection to Eimeria and Muellerius capillaries in goats were more than sheep. In other study were done by Nematollahi and Moghaddam (2008) revealed that of 100 collected fecal samples, 445 samples (44.5%) were infected to Dictyocaulus filaria larva, 195 samples (19.5%) were infected to Protostrongylus rufescent, 448 samples (44.8%) were infected to Muellerius capillaries larva and 452 samples (45.2%) were infected to cystocaulus ocreatus (Yildiz *et al.*, 2003 and Garedaghi, 2011).

In other research accomplished by Maraqa (2005) demonstrated that of 443 experimental native sheep, 90 cases were infected to hydatid cyst and no cases were infected to fasciola hepatica and Dicrocoelium dendriticum but, these values in 473 Romanian sheep were 0, 26,15 and 272 respectively. In other research carried out by Yildiz and Gurcan (2005) revealed that 3.2% of 553 lambs and 50.9% of 1320

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adults suffered from hydatid cyst and most common locations of cysts were in the lung (64.7%) and liver (51.8%). In one other study were done by Sami *et al.*, (1984) of 471 sheep, 118 goats, 157 cattle and 56 slaughtered camels in north Jordan abattoir, total contamination rate to pulmonary hydatid cyst were 27.8, 1.7, 5.8 and 10.7 percent respectively (Dawit *et al.*, 2012 and Kadir, 2008). In other study conducted by Imari, (1962) in Iraq, infection to pulmonary hydatid cyst in sheep were 42%, lambs were 12%, cattle were 22%, goats were 40%, buffalo were 50% and camels were 75%. by comparing of these results with our research results can be conclude that infection rate to pulmonary worms in Tabriz city of Iran is almost high and must be take measures in prevention and treatment fields.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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