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Original article

Prevalence of setariosis in small and large ruminant in Miyaneh city, Northweast of Iran

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ABSTRACT

Nematode Setaria belongs to Spirurida order and Setariidae family. The adult worms live in abdominal cavity freely (without clinical signs) and their sheathed microfiller exist in blood of their definitive hosts. Microfillers lead to cerebrospinal Nematodiosis and lumbar paralysis in non-specific hosts. During a year we inspected 468 slaughtered cow and water buffalo from slaughter house of Meyaneh in East Azerbaijan province of Iranlooking for adult Setaria Spp.and either collected 209 blood samplesof them and 120 blood samples of alive native cow were collected too in order to finding microfiller infection. Adult worms were examined by light microscope and blood samples were examined with Knott method in Parasitology Laboratory of Veterinary Faculty of Tehran University.52 (11.11%) slaughtered cases were infected by adult worms.2.87% and 4.16% blood samples of slaughtered cases and alive cows were infected by microfiller respectively. Maximum infection was in winter and minimum infection was in autumn. It was the first survey that had been done in East Azerbaijan province and has shown that humidity and temperature have direct effect on activation of mosquitos as intermediate hosts and incidence of setariosis subsequently and setariosis exist in this area however the rate of infection are low.

1. Introduction

Todays per capita consumption of animal protein especially red meat is one of the key economic indicators and tries to keep and maintenance of livestock as a wealth, control and prevention of morbidity to different disease is necessary. Because sheep, goats and cows are the major livestock in Iran and are in expose of parasitic disease especially internal parasites, so vast control for these kinds of disease seems necessary (Beriajaya, 2005).

Nematode Setaria belong to Spirurida order and setariidae family (Anderson et al., 2000 and ferri et al., 2009). The adult worms live in abdominal cavity freely and their sheathed microfiller exist in blood of their definitive hosts (Bartholomay et al., 2002). Differentspecies have different definitive hosts such as equine for Setaria equina and ruminant for S.digitata and S.labiatopapillosa (Singh et al., 2013). Adult worms usually have symbiotic relation with the host but emigrant microfillers in non-specific hosts such as sheep, goats and horse are cause of cerebrospinal nematodiosis syndrome or lumbar paralysis (Tung et al., 2003 and Wang et al., 1986). The infection is more common in tropical zoon that intermediate hosts have longer period of activity there (Soulsby, 1986). The aim of this research determine of Setariosis in small and large ruminant of Miyaneh city.

2. Materials and methods

Meyaneh is situated in a valley in southeast of East Azerbaijan province (coordinates, 37.27˚N 47.42˚E). During a year, 468 cow and water buffalo were examined. Mesenter, external surface of stomachs and liver, bottom of abdominal cavity and pelvic cavity were completely inspected. The founded worms were preserved in formalin 10% and were send to Parasitology Laboratory of Veterinary Faculty of Tehran University.In laboratory each worm waslaid on a slid and became clear with afew dropof lactophenole and then were examined by light microscope. The blood sample of 209 of these cases were collected simultaneously, 1cc of each blood sample was poured in a tube contain 9 cc formalin 2%and were mixed slowly. In addition 120 blood samples of alive native cows were collected during those times. All of the blood samples were referred to the same laboratory and after centrifugation (5 min, 1500-200 rpm); the sediments werestained by 1-2 drop of methylene blue separately and were examined by light microscope (Eslami et al., 2010).

2 sheep with the sign of imbalance and posterior limbs paralysis were necropsied and their brains were fixed in formalin 10% and send to Pathology Laboratory of Veterinary Faculty of Tehran University for perform pathological examinations.

3. Results

Among 468 slaughtered cases, 52 cases (11.11%) were infected by adult Setaria spp.71.13% of total worms were female S.digitata, 7.72% female S.labiato-papillosaand 21% were male Setaria Spp (Figure 1 and 2). (81% male S.digitata, 19% male S.labiato-papillosa).

Among 209 blood samples, 6 (2.87%) were infected by microfillers that just one of them was infected by adult and microfiller simultaneously (Tab.1). Examination of alive cows was shown the microfolleriosis infection in 4.16% of cases. But pathological slides didn't show any significant sign.

In order to observation and examination we have founded that maximum and minimum infection are in winter and autumn respectively but there is no significant difference between age, sex and rate of infection.

4. Discussion

Miyaneh city has semiarid climate with many rivers, rich pasture and rice fields (figure 3). Activation of intermediate hosts around these rivers and farms are effective factors in epidemiology of this kind of disease in this area, so we selected Meyaneh for this survey.

Sheep, goats and cattle's common pasture in rural area increase the chance of parasitic infection in small ruminant (Taylor et al., 2007 and Yoshikawa et al., 1976).

Baharsefat et.al (1973) have reported cerebrospinal nematodiosis for the first time from Mazandaran province, and after that Eslami et.al (1989) have reported setariosis infection in water buffalo in West Azerbaijan province. In order to a survey in 2008 by Bazargan et. al 47% of cows in Mazandaran and 13.2% in Qazvin were infected by 1 or 2 species of Setarias simultaneously that emphasis the effect of humid and warm climate on

increase of mosquitos as an intermediate hosts for Setaria spp (Bazargani et al., 2008). The lower rate of infection in Meyaneh in compared with Mazandaran can be relate to lower level of raining and humidity in Meyaneh. In 2011 Eslami et.al have shown that all of ruminant in Iran are in expose of infection by 60 species of gastrointestinal nematodes that setariosis (without clinical signe) and cerebrospinal nematodiosis (with paralysis symptom) are in this group, however the rate of infection in Iran is low or moderate, can effect on livestock products. There are reported of lumbar paralysis in Taiwan (Tung et al., 2003) and Setaria infestation in India (Singh et al., 2013) These country have humid and warm climate and exist of infection in these area are in accordance with the investigation in Iran. There are reported of Setariosis in ruminant of Finland (Laaksonen et al., 2007 and Solismaa et al., 2008) and There is a report of congenital infection with S.digitata and S.marshalli in the thoracic cavity of a Korean calf (Kim et al., 2010) but there isn't such reported in Iran. In order to the other reported from other countries, Setariosis have shown its clinical signs in the countries with humid and warm climate.

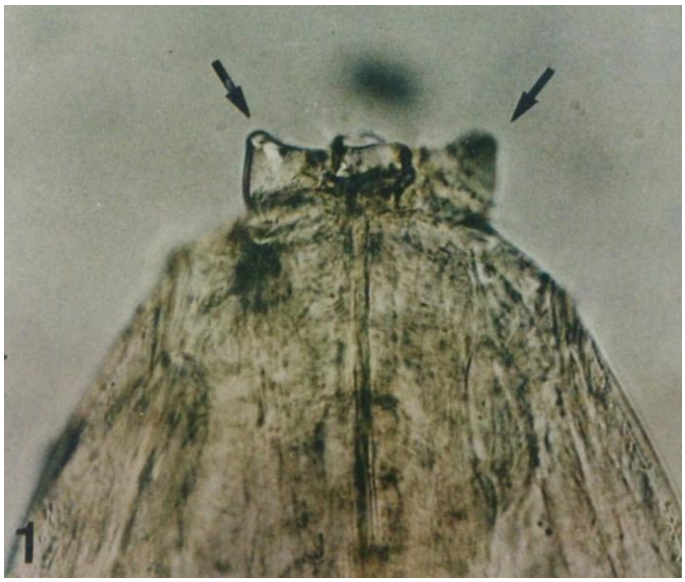

Fig. 1. Anterior part of setaria digitata.

Fig. 2. Posterior part and spicules of setaria digitata.

Fig. 3. Rice fields in Miyaneh City.

Table1
Prevalence of setariosis in rumin.

Sample / Case	cases	Infection	Percent
slaughtered cases	468	52	11.11
Blood Samples	209	6	2.87

5. Conclusion

This survey which has done in East Azerbaijan province for the first time has shown that setariosis and cerebrospinal Nematodiosis exist in this area.

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