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Title:

Epidemiological, Molecular and Immunological Characterization Study of *Parabronema skrijabini* in Sheep and Goat in Basrah Province

Abstract:

Parabronema skrijabini is a spirurid nematode of the family Habronematidae that lives in the abomasum of ruminants such as sheep and goats. The purp ose of this study was to investigate the epidemiological, molecular and immunological aspects of *Parabronema skrijabini* in sheep and goats in Basrah /Iraq. The samples were collected from Basrah slaughter house in the period from June, 2016 to January, 2017, with total number of abomasum's examined sheep (576) and goat(150).The first part of the study includes the gross and microscopic examinations of abomasum' s of sheep and goat showed the presence of *Parabronema skrijabini*, taxonomic features and measurements of parasites by traditional methods.The second part of the present study include the determination of prevalence and evaluation of the effect on some elements in the epidemiology of the infection. The results showed the total percentage infection in sheep is between (5.91 to 9.15) for male and female, respectively. The statistical analysis showed that there are a significant differences under (P< 0.05) between percentage of infection in male and female sheep (0.035).

The intensity of infection of s heep showed a significant difference between males and females. According to the monthly survey, the current study reveales that the highest level of prevalence occurred in October and December (22.02% and 18.82%) respectively, and the lowest level was recorded in November and January (0%).There are Significant differences (P< 0.048)) among the rates of infection with *Parabronema skrijabini* at different months. The intensity of infection of sheep showed a significant difference at different months (P< 0.035). In goats, the total number of the examined is (150), divided into 144 male and 6 female, but the total infected was (5), in male, there was no infection in female .The total percentage infection. In goat 3.47 % for male only. According to the sex survies, the results showed an analysis of disease pattern in male and female sheep with higher rate of infection in females 5.91% than males 9.15%. But in goats infection was higher in males 3.47% than females. In sheep and goats the prevalence was higher in males 9.38% than female 9.15%.

The statistical analysis of sheep showed that there are significant differences between percentages of infection at sex 0.035. The intensity of infection of sheep showed a significant difference in sex 0.043 in goat. According to seasons, the highest 11.61 % in sheep, 6.25% in goats, prevalence was recorded in autumn, while the lowest 0 % in

sheep, 0% in goats and 16.5% in both the sheep and goats prevalence was recorded in winter. The statistical ana lysis showed that there were a significant differences between percentages of infection according to seasonal 0.022. The intensity of infection of sheep shows significant difference in seasonal 0.04. The third part of this study include diagnosis of *Parabronema skrijabini* by using PCR technique assay which based on a 783-bp long sequence of the 28S rRNA gene, the total genomic DNA has been extracted by extracting kit with some modification. The fourth part of the study discusses the possibility of the preparation of antigen and partial purified in which has been prepared from isolated parasite and were injected subcutaneously under the shoulder of (mice *Balb / c*). And absorbed formation of immunity reaction in the site of injection by Gasoni test. The test shows positive result after a period ranging from 1 hour to 2 hours. After injection, which gave quick sensitivity to the injected antigens, the sensitized halo diameter was 1.8 mm compared with the negative state (ie no interaction) while the diameter was 0.5. The non-sensitive aura was less than 0.5 mm. All of the affected strains gave positive result to this test, compared with the other seeds injected with the normal saline. And in indirect Heamagglutination test (IHAT), the results showed that the ratio of antigen to adult worms was injected for 5 cc dose <1 /20 for two different periods one week and one month where the results were all positive compared to the control group.

On the other hand the sensitivity of the test antigens (adult purified) using IHAT was evaluated depending on the results. The titer ≥ 1/20 was considered positive for purified adult of *Parabronema skrijabini.* The sensitivity of the test was calculated and it was found 100 % using adult purified antigens in mice for all periods used. The specificity was 100% for all periods.In the fifth part, included of gross pathological and microscopically lesions in the abomasum's of sheep and goat due to the infection with the *Parabronema skrijabini* is reported. The gross lesions showed congestion, thickened mucosa with petechial hemorrhage, edema and occurrence of small nodules in the abomasum's. The result showed a proliferation of mucosal glandular epithelium and associated of inflammatory cells in the lamina properia ,that larval stage and adult of *P. skrijabini* embedded in sub mucosal layer causing Inflammation of the abomasum, which manifested in leukocytic infiltration in the mucosal observed in infected animals corresponding to control was primarily due to mucus cell hyperplasia. Infection of the abomasum's causing similar lesions. The cellular response to abomasa nematodes involves the accumulation of inflammatory cells such as leucocytes, eosinophils. Abomasum showed varying degrees of ulceration and congestion of the mucosa.