

CLINICAL, HEMATOLOGICAL AND BIOCHEMICAL PICTURES AS A MONITOR OF CAPRINE FASCIOLIASIS ⁺

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Abstract:

An experiment was done on 200 local Iraqi male goats naturally infected with fascioliasis. The results of experiment show that: hemoglobin(Hb), eosinophil counts, SGOT, SGPT, SLDH, fibrinogen, bilirubin and E.P.G.S were convenient parameters to assess antihelmintic activity in chronic cases of infection. There is gradual significant increase in Hb concentration and significant decrease in SGOT, SLDH and eosinophil count on the 3rd week post treatment with triclabendazole, while the result dont show any significant changes in serum proteins.

المستخلص:

أجريت التجربة على 200 حيوان من ذكور المعز المحلي العراقي المصاب طبيعياً بديدان الكبد، وقد اشارت نتائج التجربة الى ان المؤشرات الدموية من خضاب الدم والحمضات والانزيمات SLDH, SGPT, SGOT ، الفايبرونوجين واللبيروبين، اضافة الى إعداد البيوض في البراز تعتبر مؤشرات مناسبة لتقويم كفاءة العلاج بطاردات الديدان في الحالات المزمنة للخمج. كانت هناك زيادة معنوية تدريجية في معدل تركيز خضاب الدم وانخفاض معنوي في كل من SGOT و SLDH واعداد الحمضات في الأسبوع الثالث بعد العلاج بعقار الترايكلابندازول في حين لم تظهر النتائج اي تغير معنوي في بروتينات المصل.

INTRODUCTION:

Infection of ruminants by the liver fluke is the most important parasitic diseases. causing devastating economic losses in Iraq [1,2,3,4,5&6] as well as many other parts of the tropical and subtropical countries [7, 8&9].

There is very little work concerning the parasitic effect, control treatment and other aspects of the disease in the goats of Iraq. Also there are controverseries concerning the comparative susceptibility of sheep and goats infections [2&10].

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This work is designed to assess certain clinical, hematological *Fasciola gigantica*, one and serum enzymes, as a monitor for the effect of new drug of benzimidazole group which has also proved to be effective and safe in treatment of human *F.hepatica* infection. [7&11]

MATERIALS AND METHODS:

This experiment was conducted on (200) local Iraqi male goats naturally infected with fascioliasis in Baghdad. Clinical, Postmortem was conducted and coprological data were collected, then twenty positive, local breed male goats of nearly similar findings, were selected to detect the hematological and biochemical pictures in trial.

Animals were isolated in a clean indoor system. when adequate diet of concentrate (0.5 kg/40 Kg. B.W.) and a silage were given (*ad libitum*) daily during an experiment.

Blood samples (5c.c) were collected from the jugular vein of each animal regularly, at weekly intervals in tubes containing EDTA as anticoagulant for hematological investigation, and other tubes plain for serum enzyme procedures.

Standard hematological techniques includeing RBCs count by Naueber's chamber method, P.C.V., Hb estimation by the photometric method, absolute eosinophil count as well as fibrinogen, SGPT, SGOT estimation all were according to [7].

Total bilirubin was done according to [12], SLDHT [13], the total serum proteins [14], and fecal egg counts (E. P. G.) were according to [15].

These animals were treated with triclabendazole* (suspension) at dose of 10mg/kg B.W. *per os*. Data were statistically analysed by using t- test [16].

RESULTS & DISCUSSION:

First: Clinical Findings:

The total incidence of infection based on coprological examination was 34%, the incidence was high compared with other survey studies in our country [1, 17, 2 & 3], and this may be attributed to the small size of sample, besides it was concerned with a limited period of time in the season.

The most frequent clinical finding of the infected flock was the paleness of visible mucous membranes 50%, which reflects the status of anemia in the affected animals, and this is in accordance with [8 ,18 & 9]. Moreover, weakness and emaciation of 32% followed by decreased appetite 13% and the easily detached hair 4%, could be collectively due to anorexia, disturbed liver functions, hypoproteinemia, the mortalities was 1% and this is attributed to secondary complications and acute hemorrhages [9].

The nature of anemia in fascioliasis is attributed to acute blood loss by the migratory stages in the liver and the dyshemopoetic effect of the parasite waste besides it's blood sucking activities and fibrosis that occurred in the chronic stage of infection [19].

Second: Hematological findings:

The treatment of goats with triclabendazole was reflected by gradual increase in the mean Hb concentration from 7.4 gm/ dl in the 1st week post treatment to reach a significant level ($p < 0.05$) on the 3rd week post treatment 9.3 gm/ dl., PCV% and RBCs counts were at the means of 21.5% and 5.4×10^6 /cmm repectively before treatment, then there were highest significant ($p < 0.05$) mean at the 3rd week post treatment, when they were 29% and 6.8×10^6 /cmm respectively (table, 1). This was in accordance with [19] who explain the shift of state of anemia in sheep to wards normal morphology and staining by using Fe⁵⁹ isotope technique.

Absolute eosinophil count mean was 280/ cmm before treatment to show sharp significant decrease ($P < 0.01$) on the 2nd and 3rd weeks post treatment (table,1), and this accordance with [20 & 21] and this could be due to disappearance of the parasite from the liver tissues.

Third: Serum biochemical findings:

SGOT level was 186.4 I.U/L before treatment, then significantly ($p < 0.05$) decreased on the 3rd week post treatment, while SGPT level didn't show any significant change during the experiment, SLDH mean value was 2280.3 I.U/L on the 1st week before treatment, then decreased significantly ($P < 0.05$) on the 2nd and 3rd weeks post treatment (table,2).

The increased SGOT and SLDH values before treatment compared to their significant decrease ($P < 0.05$) in post treatment, maybe justified to their leakage from tissues damaged by infection and due to liver repair and regeneration post treatment afterwards, as stated by [22].

Total S-fibrinogen value (table,2) was increased post treatment compared to its low level of production and this may be due to infection and may be an indication of impaired liver function [23].

Total serum protein and serum bilirubin didn't show any significant changes during the weeks of experiment (table,2) and this may be attributed to the chronic nature of infection which indicated a status of compensation . This was in accordance with [24].

Fourth: Fecal egg count [E.P.G]:

The results showed increasing fecal egg counts to 26.5 E.P.G. in the week before treatment, then the mean of egg decreased to 8.8 E.P.G. to reach zero values after 3 weeks post treatment (table,2), this accordance with [20 & 21].

Conclusively, hematological and biochemical findings in fascioliasis, together with clinical picture and cessation of egg production could be of paramount significance in assessing and monitoring the state of health of animal before and after treatment, besides triclabendazole has proved to be effective drug for treatment of fascioliasis, without bad obvious side-effects.

Table[1] Hematological triats of Iraqi local goats infected with fascioliasis and treated with triclabendazole.

Parameters	[weeks after experiment]			
	0	1	2	3
RBCs [count $\times 10^6$ /cmm]	5.4 ± 0.4	5.8 ± 0.6	5.9 ± 0.3	6.8* ± 0.9
Hb [gm/dl]	7.4 ± 0.2	8.6 ± 0.4	8.8 ± 0.7	9.3* ± 0.7
P.C.V.[%]	21.5 ± 1.2	25.0 ± 0.5	27.1* ± 0.7	29* ± 0.6
Epsinophil Count/[cmm.]	280 ± 13.5	125* ± 10.5	20* ± 5.5	10** ± 0.5

*significant at 0.05 level

** significant at 0.01 level

 $\pm$ SE:Standered Error**Table[2]** Biochemical and [E. P. G.] traits of Iraqi local goats infected with fascioliasis and treated with triclabendazole.

Parameters	[weeks after experiment]			
	0	1	2	3
SGOT [I.U/L]	186.4 ± 12.1	200.8 ± 14.1	187.4 ± 10.3	104.5* ± 8.3
SGPT [I.U/L]	60.3 ± 7.2	67.3 ± 11.2	64.3 ± 9.8	59.9 ± 6.2
SLDH [I.U/L]	2280.3 ± 103.5	2208.7 ± 87.2	1881* ± 178	1287.6** ± 136.2
Fibrinogen [gm/dl.]	368.2 ± 15.3	558.2* ± 33.4	606.2* ± 18.1	759** ± 17.2
Total S. Protein [gm/dl]	7.8 ± 0.4	7.9 ± 0.8	6.9 ± 0.8	7.9 ± 1.9
S. Bilirubin [gm/dl.]	0.98 ± 0.21	0.89 ± 0.40	0.99 ± 0.3	0.78* ± 0.23
Fecal Egg Count [E.P.G.]	26.5 ± 8.1	8.8** ± 3.2	0.0**	0.0**

*significant at 0.05 level

** significant at 0.01 level

 $\pm$ SE:Standered Error

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