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Prevalence of Liver Flukes in Some Areas of Salahalddin Province

ABSTRACT

The present study aimed to diagnosis liver flukes in sheep in Tikrit and Balad districts and compare between prevalence of liver flukes that infect sheep through prevalence of infection and severity of infection. The present study included examination of 951 sheep of both sexes, and aged ranges between less than 1 year and more than 2 years through December 2017 to the end of June 2018. Flukes were isolated directly from liver of sheep. Infected sheep in Tikrit was 97 sheep with prevalence of infection 17.54% and in Balad there was 35 infected sheep with prevalence of infection 8.79%. The highest prevalence of infection in Tikrit recorded in January30.58% and the lowest prevalence of infection recorded in June10% while highest severity of infection was in December it was 2.3 and the lowest severity of infection was in January 1.07 . In Balad discrete highest prevalence of infection recorded in December 13.33% and the lowest prevalence of infection recorded in June 3.84% while highest severity of infection was in December 2.75 and the lowest severity of infection was in January 1.75. The statistical analysis shows that there is no significant difference in infection rate between Tikrit and Balad.

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INTRODUCTION:

Parasitic helminthes are a major cause of many diseases affecting animals and plants ,It is one of the multicellular animal groups that obtain a great medical attention as the livestock is affecting by many different types of pathogenic parasites which may eliminate most of them or reduce their productivity it is also affect their immune resistance and make them susceptible to various diseases , environmental conditions play an important role in prevalence and reproduction of these parasites and their survival in different environments causing serious economic loses in the consumption of meat and milk (Arafa,2007). Iraq has a large livestock including large number of sheep more than 8 million sheep as it indicated by statics of Iraq (AL-Bayati and Arslan ,2009) .World health organization (WHO) (2007) has conformed fasciolasis become a threat to human health as its common disease between humans and animals that leads to liver inflammation and enlargement of gallbladder. External environmental factors play a major role in regulation and prevalence of parasitic infection(Bucknell *et al*, 1996) .It should be noted that prevalence of these helminthes varies according to year seasons as the growth of infective stages were limited in countries with moderate climate with distinct seasons by drought in summer and high humidity in autumn compared to countries with tropical climate where rains continues throughout the year and the relative humidity

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is high and moderate temperature as the infective stages can occur throughout the year (Urquhart *et al*, 1996). In general incidence of infection is high in seasons in which environmental conditions are favorable to egg hatch and its growth to infective stages (Abdulmajeed,2005) . Liver flukes belongs to Platyhelminthes phylum and Trematoda class Fasciolidae family it requires two intermediate hosts to complete their live cycle (Fisher and Holdsworth , 2017).

Leiper (1957) recorded both of *Fasciola hepatica* and *Fasciola gengtica* in Iraq and referred to their importance in Iraq .AL-taif (1970) recorded the prevalence of infection in sheep with liver flukes was 33.4% in all over Iraq specially in marshes and swamps in south of Iraq as the researcher pointed to the presents of the species *F.hepatica* in north and east of Iraq .

AL-Nammy (1978) reported the highest prevalence of infection of liver flukes in Baghdad was in November 40.8% and the lowest prevalence of infection was in June 7% and concluded that *F.hepatica* was confined to the northern regions in Iraq ,In a study carried by Wajdi and Nassir (1983) in Baghdad slaughtered house they pointed that the prevalence of infection of *F.hepatica* recorded in goat only 0.6%, AL-bayati (1986) reported the prevalence of infection of *F.hepatica* in Mousl was 13.3% while its recorded in camels 8.4% (AL-Khalidi *et al*.,1990).AL-khafajei and his group (1998) referred to the prevalence of fasciolasis in cattle in Mousl through (1980-1993) was 1.2%. Jargess (2002) recorded the prevalence of infection with *Fasciola* in goat and calves in Mousl slaughtered house was 0.13% ,4.29% respectively.

In a study carried by Ali and Eleoi (2010) in south Baghdad they recorded prevalence of infection of *F.hepatica* in sheep 27.4% and most of the infections were in summer and less were in autumn, Hassan (2015) find out in his study of liver infections in sheep in Erbil the prevalence of infection was 0.98% and the highest was in March. Abaas and his group recorded prevalence of infection in Kirkuk was 72%. Due to high incidence of liver flukes the present study aimed to diagnosis of liver flukes in sheep and their prevalence of infection and severity of infection through the months of the study.

MATERIALS AND METHODS:

Sample collection

Sheep's liver samples were collected from slaughtered sheep in research areas of Tikrit and Balad districts through December 2017 to June 2018 in ages that ranges between less than 1 year and more than 2 years of both sexes with weight ranges between 10kg to 40 kg .951 sheep were examined including infected and non-infected sheep ,sheep's liver samples were examined according to Collins and Gracey (1992) as the gallbladders were separated and its contents were collected in conical flask and filtered to remove impurities and suspended materials ,bile ducts were opened to detect adult flukes ,flukes were placed in ethyl alcohol 70% until diagnosis

picture (2)
F.hepatica

picture (1)
Sample collection

Diagnosis of liver flukes

After obtaining liver flukes from slaughtered sheep they were washed with normal saline 0.9% and fixed with ethyl alcohol 70% and stained with acetocarmin stain (Scholz and Aguirre-Macedo, 2000).

Statistical analysis

Kay square examination was conducted to determine whether there was a difference in infection of sheep with liver flukes (Watt,1997).

RESULTS AND DISCUSSION:

Our results shows infection *F.hepatica* The highest prevalence of infection in Tikrit recorded in January 30.58% and the lowest prevalence of infection recorded in June10% while highest severity of infection was in December it was 2.3 and the lowest severity of infection was in January 1.07 . In Balad discrete highest prevalence of infection recorded in December 13.33% and the lowest prevalence of infection recorded in June 3.84% while highest severity of infection was in December 2.75 and the lowest severity of infection was in January 1.75 as the table (1) shows. The statistical analysis shows that there is no significant difference in infection rate between Tikrit and Balad. These results did not agree with (Ali and Eleoi ,2010; Hassan,2015; AL-Bayati,2009) and agree with (AL-Obaedi ,2001; Al-Jibouri,2008; Baderkar *et al*.,2000) they recorded the highest prevalence of infection of *F.hepatica* in January in Mosul slaughtered house this due to that the animals had took the infection at the end of summer or the beginning of autumn and that agree with (spithill *et al* .,1999).

the prevalence of infection of this study was high compared with previous studies it's may due to few number of examined animals or due that our research has concentrated on sheep herds that graze in areas near to Tigris river whereas high incidence of intermediate hosts of these helminthes. The high prevalence January its due to that taken of miracidium at the end of summer or beginning of autumn as the miracidim remain a long time alive in appropriate conditions the high decrease in rain in October and November eased the release of miracidium from snails and when temperature and wet soil are available after rain fall in December miracidium released from snails to water or plant that cause high prevalence in January miracidium can survive 6 months in appropriate climate (spithill *et al* .,1999).

the low prevalence of infection in summer is associated with change in climatic conditions and lack of rains (Al-Delemi,2005).

Table (1) Percentage and severity of infection with *F.hepatica* in Tikrit and Balad

Balad					Tikrit					
severity of infection	percentage %	flukes number	infected samples	Examined samples	severity of infection	percentage %	flukes number	infected samples	Examined samples	months
2.75	13.33	11	4	30	2.3	20	23	10	50	December 2017
1.75	11.42	14	8	70	1.07	30.58	28	26	85	January 2018
2	9.52	12	6	63	1.25	25.00	25	20	80	February
1.83	10.16	11	6	59	1.72	12.22	19	11	90	March
2.6	6.49	13	5	77	1.37	13.33	11	8	60	April
2.25	8.51	9	4	47	1.41	13.63	17	12	88	May
2.5	3.84	5	2	52	1.5	10.00	15	10	100	June
2.14	8.79	75	35	398	1.42	17.54	138	97	553	SUM

picture (4) Front of *F.hepatica*

Picture (3) adult of *F.hepatica*

CONCLUSIONS:

December one of the most important moths for *F. hepatica* prevalence in Tikrit and Balad districts. There was detectable relationship between prevalence of infection and months of the year that reflects on prevalence of various types of helminthes

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انتشار ديدان كبد الأغنام في بعض مناطق محافظة صلاح الدين

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المستخلص

استهدفت الدراسة تشخيص مخرمات الكبد في الأغنام في قضائي تكريت وبلد و المقارنة بين انتشار المخرمات الكبدية التي تصيب الأغنام من خلال تحديد النسبة المئوية للإصابة وشدة الإصابة , تضمنت الدراسة الحالية اختيار 951 رأس من الغنم من كلا الجنسين وبإعمار تراوحت ما بين1 – 2 سنة خلال مدة الدراسة الممتدة من شهر كانون الاول 2017 ولغاية شهر حزيران 2018 , وتم عزل المخرمات مباشرة من اكباد الاغنام المصابة والتي بلغ عددها في قضاء تكريت97 رأس من الغنم وبنسبة مئوية بلغت17.54 % وفي قضاء بلد بلغ عدد الاغنام المصابة 35 رأس من الغنم وبنسبة مئوية كانت 8.79 %. وسجلت أعلى نسبة اصابة في قضاء تكريت في شهر كانون الثاني حيث بلغت 30.58% واقل نسبة مئوية للإصابة في شهر حزيران إذ بلغت 10%. بينما كان اعلى معدل لشدة الاصابة في شهر كانون الاول اذ بلغ 2.3 واقل معدل لشدة الاصابة في شهر كانون الثاني كان 1.076. وفي قضاء بلد كانت اعلى نسبة مئوية للإصابة في شهر كانون الاول إذ بلغت 13.333% واقل نسبة مئوية للإصابة في شهر حزيران إذ بلغت 3.846% , بينما كان اعلى معدل لشدة الاصابة في شهر كانون الاول إذ بلغ 2.75 واقل معدل لشدة الاصابة في شهر كانون الثاني كان 1.75 . واظهرت نتائج التحليل الاحصائي وبموجب عدم وجود فرق معنوي في نسبة الاصابة بهذه الديدان بين قضائي تكريت وبلد.

الكلمات المفتاحية: مخرمات كبد الأغنام، نسبة الإصابة، شدة الإصابة.