

## RATIVE STUDY ON CATTLE SARCOCYSTOSIS DIAGNOSTIC TECHNIQUES IN DOHUK GOVERNORATE

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### ABSTRACT

Out of one hundreds heads of cattle slaughtered in Dohuk abattoir of Iraq – Kurdistan region , Sarcocystosis showed to be occur in percentage of 81 – 96 % for microscopic cysts( microcysts ) of *Sarcocystis spp.* of cattle by several diagnostic techniques ( gross examination , trichinoscopy , squeezing method and post trichinoscopy drop examination ) which are varies in their efficiency depending on organ and the parasitic stage that can be detected by the used technique .

The seasonal effect showed to be not effect in the distribution of the infection and that very important in the epidemiology of the disease as occur through statistical analysis.

### INTRODUCTION

*Sarcocystis* parasite is an obligate one which need two hosts to complete its life cycle (1). The parasite infected wide ranges of animals with host specificity (2) and its produced cysts in there intermediate host muscles ranged in their size from microscopic (microcyst) to macroscopic (macrocyst) which can be observed by naked eyes (3). There are various diagnostic techniques for detection of the parasite which are varies in their requirement and difficulties (4), and these are the histological technique (5), gross exam (5,6), trichionoscopy (5,7), squeezing method (4) and several hematological and immunological techniques (8,10,11).

Cattle Sarcocystosis was investigated previously in Baghdad / Iraq (10), as well as, for other animals like sheep (14), goats (13) and Buffalo (2).

The current study was done to investigate cattle sarcocystosis in cattle of Dohuk governorate for the first time especially when that disease involved man and dog as final host.

### MATERIALS AND METHODS

- 1- Samples collecting: One hundred fifty samples collected randomly in combination of gross exam for presence of macrocysts of sarcocystosis from local governmental Dohuk abattoir for the period from January 2007 to May of 2007 (30 samples/month), each sample consist from 3 pieces from the same animal, each piece taken from skeletal muscles of legs, esophagus, and diaphragm of slaughtered cattle in combination with gross examination and transfer coolly to Vet. Med. College laboratory for further studies.
- 2- Each single sample treated as follow:
  - a- Re exam for presence of macrocysts of sarcocystosis .
  - b- Each three organ exposed to trichinoscopy (5, 7), post trichinoscopy drop exam. (9) and squeezing method (4).
- 3- Histological routine method with staining by H.&E. (12) done for just three samples for improvement of the microcysts with its distinguished capsule .
- 4- The data tabulated and statistical analysis (ANOVA)\*.

## RESULT AND DISCUSSION

The total percentage of infection with cattle sarcocystosis in native cattle of Dohuk governorate reach 96% depending on targeted organ and the used method (tab.1) and that may be related to what was seen in these method as in gross exam where no macrocytic cysts observed and that could be attributed to little numbers which were taken in combination of low age of slaughter animals and that agree with previous study (13) in cattle of Baghdad when it observed just 0.18% of macrocytic cysts. In, contrast the trichinoscopy detected disease with 70–81%(tab.1) depend on organ where the microcysts(fig.1) of the parasite were detected in various size or shape . The cysts seen in high percentage in the skeletal muscle, diaphragm and lately within the esophagus (tab.1) and that could be explain by the structure of these organ where the fascia of the esophagus prevent the observation of parasitic microcysts by microscopic examination. These results relatively agree with previous studies (4,14) while it slightly below that of Mohammad (13) in goats. Although the results of post trichinoscopy drop exam which depend the seen of cystis cytizoites of the parasite (fig.2) elevate the percentage of diagnosis (89–92 %) in relation to used organ (tab.1) and that agree with previous study (9) when this method used for the first time in goats of Libya (98 % ) which improved the efficiency of this method in combination of its simplicity and its requirement Lately the squeezing method showed percentage of 86 – 96 % of parasitic diagnosis as it depend on observation of parasite cystizoites which release from there cysts under pressure of press used in this method and that agree with previous study (4) on bovine, while the organ also affect the results due to same probable reason within trichinoscopy as above.

The total percentage of sarcocystosis in cattle of Dohuk reach in total 96 % and that agree with previous studies (9,13,14,15) and that very important for the epidemiology of

\* Niazi,J.(1993).Introduction to medical biostatistics.2<sup>nd</sup> ed.Jordan

the disease Finally the number of positive cattle sarcocystosis cases in related to months of study revealed significant according to diagnostic used method (squeezing, post-trichinoscopy and lately trichinoscopy), while the ratio of infected cases per month show no significant differences and that agree with previous study (9) and may be attributed to the intracellular nature of the parasite which make it protected from the effects of climate.

**Table (1):-The total positive sarcocystosis cases in related to examined organs.**

Examine organ	cattle sarcocystosis diagnostic methods			
	Gross examine	Trichinoscopy	method* Post trich..drop	Squeezing exam*
	Positive / total	Positive / total	Positive / total	Positive / total
Esophagus	0 / 100	70 / 100	90 / 100	86 / 100
Skeletal muscle	0 / 100	81/100	89 / 100	96 / 100
Diaphragm	0 / 100	79 / 100	92 / 100	93 / 100

\*Significant (P<0.05)

**Table ( 2 ) :- Number of positive cattle sarcocystosis cases in related to month and used diagnostic methods.**

Method of diagnosis <sup>1</sup>	Esophagus Number of Positive/25 samples					Skeletal muscle. Number of Positive/25 samples					Diaphragm Number of Positive/ 25 samples				
	Month					Month					Month				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Gross Exam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichinoscopy	22	20	15	22	20	24	25	24	25	24	23	23	24	25	24
Post trichino.* drop exam	26	27	25	27	24	30	29	28	27	30	29	29	27	28	28
Squeezing**	26	28	29	27	25	26	28	27	26	27	27	28	28	26	29

\*Significant (P<0.05).

\*\* Significant (P<0.01).

1- Approximated was used when it necessary.



**Fig.(1):Sarcocystosis cyst of cattle inside skeletal muscle by Trichinoscopy technique (X 10).**



**Fig. (2):Cystozoites of cattle Sarcocystosis by squeezing method (x40).**

## CONCLUSION AND RECOMMENDATION

The study improved that cattle sarcocystosis which occur in high percentage indicating the wide distribution of the disease in the area for the first time in Dohuk governorate in Kurdistan region-Iraq, which also related to the presence of the final host (man and dogs) which is very important for public health and need more expanded study to cover various aspects of this disease.

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## دراسة مقارنة في التقنيات التشخيصية لداء الحويصلات الصنوبرية في أبقار محافظة دهوك

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## الخلاصة

عند دراسة 100 رأساً من ذبائح الأبقار في محافظة دهوك - كردستان العراق، أظهرت النتائج ان داء الحويصلات الصنوبرية في الأبقار منتشر فيها بنسبة عالية ( 81-96%) للشكل المجهرى اعتمادا على التقنية المستخدمة بالتشخيص و العضو المستخدم عند الفحص و اوضحت الدراسة ان طريقة فحص العصارة وفحص القطرة ما بعد فحص ومنظار الشعريات ملائمة لملاحظة اكياس الطفيلي المجهرية او الحويئات المتحررة منها باعتماد مختلف انواع عضلات المضيف الوسطي ( الأبقار).واكدت الدراسة ان نسبة انتشار المرض لا تتأثر بأشهر السنة.

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