

Original paper

First document on the presence of Iraqi *Dirofilaria immitis*

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Summary

Canine dirofilariasis in Iraq was thought not present. This is the first report of dog heartworms in our country. Hearts of 22 dogs from various sites in Kerbala province were examined for *Dirofilaria immitis* infection. Peripheral blood from dogs with worms in the heart was examined for microfilaria. Adult worms were found in 16 (73%) hearts. Microfilaria in blood not tackled in the present work. From these finding we hypothesis that heartworm disease is usually present in / or imported from those areas that are endemic for canine dirofilariasis.

Key words: nematode , filarial , *Dirofilaria immitis* , canine heartworms , Kerbala , Iraq .

بحث أصيل

التوثيق الأول لوجود الدايروفيلاريا ايميتس العراقية

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الخلاصة

انفردت الدراسة الحالية في كونها الأولى في العراق في تسجيل الإصابة بديدان القلب الكلبية *دايروفيلاريا ايميتس* ، حيث الاعتقاد السائد لدى العديد من الاوساط العلمية والبيطرية بعدم وجودها في القطر . تم قتل وتشريح ٢٤ كلب من مناطق مختلفة في محافظة كربلاء/العراق . مع جمع ٥-٣ ملي لتر من الدم المحيطي للكشف عن اليرقات الخيطية الدقيقة في الكلاب المفحوصة . وجدت الإصابة في قلوب ١٧ (٧١٪) كلب مفحوص . وفي دراسة لاحقة سوف تذكر التفاصيل الشكلية والحيوية ليرقات الطفيلي والتي لم تعالج في العمل الحالي . افترضنا على ما حصلنا عليه من نتائج ان الإصابة بهذا الطفيلي عدة موجودة في /أو مستوردة من المناطق المستوطنة بالدايروفيلارياس الكلبية .

الكلمات الدليلية: الاسطوانيات ، الخيطية ، دايروفيلاريا ايميتس ، ديدان القلب الكلبية ، كربلاء ، العراق.

Introduction

*Dirofilaria immitis* a mosquito-borne nematode parasite which is widely distributed throughout the world and is most prevalent in the tropical and subtropical zones [ 1 & 2 ] .Although dogs and wild canines are considered to be the natural hosts for this parasite, it can infected other species of animals as well as man . Since 1979 , heartworms have been known as a zoon sis , and humane are the dead end host [3-5] . The adult worms usually found in the right side of the heart or in the pulmonary arteries , while microfilaria Mfs circulate in the peripheral blood [6] . It is most common important parasite , in heavy infestation ,causing sever cardiopulmonary and even death of some animals [7] .

The taxonomic groups are genus and species *Dirofilaria immitis* (Leidy, 1856; Railliet and Henry, 1911) of family Onchocercidae of ordre Spirurida of subclass Spiruria of class Secernentea [ 8 ] .

Canine dirofilariasis in Iraq was thought not present. This is the first case of heartworms infection in Iraq to our knowledge.

Materials and Methods

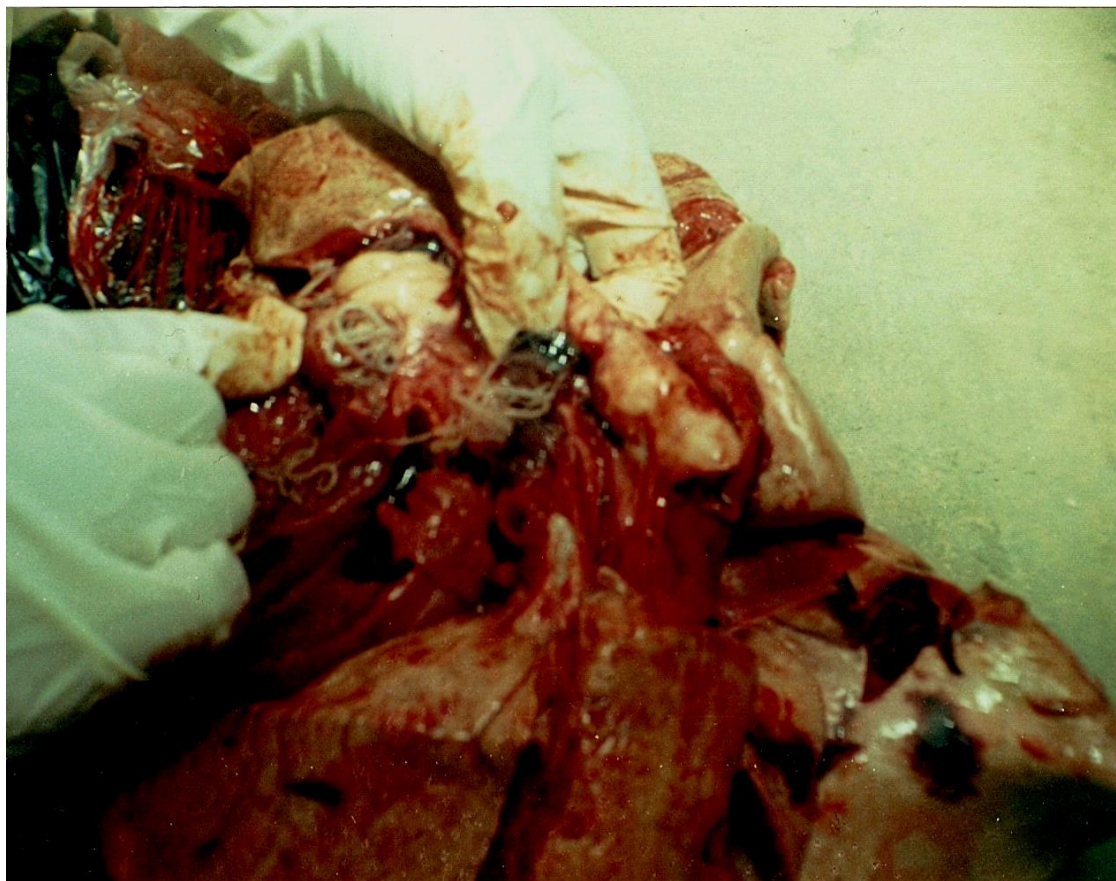
The hearts of 22 mixed breed dogs ( guarding and herding breed) from both sex , 9 months and over 11 years old were examined for *Dirofilaria immitis* from various sites of kerbala province /Iraq , were killed and autopsied from last May to mid June 2008 . Hearts and lungs were removed from the thoracic cavity through the diaphragm and abdomen. All chambers of the heart and adjacent vessels were opened and examined for heartworms. Blood samples was drawn in EDTA tubes were examined for Mfs not tackled in the present work.

**Results**

Adult of *Dirofilaria immitis* were found in 17 of 24 (70.83%) dogs (Table 1). Worms were found in the right and right ventricle of the heart, pulmonary artery, in the middle and lower lobes of the left and right lungs and their pulmonary vessels (Figure 1)

The results of this study show that the rate of *Dirofilaria immitis* in male were 16 of 17 (94.11%) while in female the rate of infection in percentage of 5.88% .

Only 8(47%) dogs harboring adult parasite and Mfs (4 dogs had females worms and one a male) . 9(52.94%) dogs had worms without Mfs in their blood (4 dogs had only female , 1 dog only a male and four dogs had both sexes) .



**Fig. ( 1 ) *Dirofilaria immitis* in the lung & heart from infected dog .**

**Table(1): prevalence of *Dirofilaria immitis* infection in 24 dogs from kerbala/Iraq**

Dog no.	Date	Sex	Microfilaria in blood	Adult worms	No. of worms in heart & lungs
1	25.5.08	M*	Absent		
2	=	F**	=		
3	26.5.08	F	=		
4	27.5.08	F	=		
5	=	M	=		
6	29.5.08	M	Present		
7	6.6.08	M	=		
8	7.6.08	M	=		
9	=	F	Absent		
10	=	M	Present		
11	9.6.08	M	Absent		
12	=	M	=		
13	=	M	=		
14	=	M	=		
15	=	M	=		
16	=	M	Present		
17	10.6.08	M	=		
18	=	F	=		
19	=	M	Absent		
20	12.6.08	M	=		
21	=	F	=		
22	=	M	Present		
23	=	M	Absent		
24	=	M	=		

\*=male , \*\*=female

#### Discussion

Canine dirofilariasis in Iraq was not reported and was thought not present. We Surprise with the high prevalence of infection (72.72%). We hypothesized that these areas are enzootic foci for canine dirofilariasis . However this is first study with *Dirofilaria immitis* infection in dogs in Iraq particular in kerbala province . Heartworm more prevalent in areas study because : of the abundance of mosquitoes . The rate of infection in mosquito generally correlates with the number of Mfs in patients , whether humans or animals [9].Areas of study are forested and serve as ideal habitats for the development of mosquitoes [10] . The more male dogs than female dogs were infected may be related to the roaming of male dogs rather than to a susceptibility differences due to size , sex or hair length [11]. Infection primarily related to exposure to infected mosquitoes and not to any susceptibility differences [12]. In this study , the Mfs in dogs infected with *D.immitis* was absent, are probably related to the occult form of the disease , the main reason was absence of one sex[13], or that the rate of infectivity for *D. immtis* in mosquitoes is lower [9] . The presence of worms from single sex in heart with Mfs in peripheral blood may be due to death worm of opposite sex [13]. The location, low socio-economic conditions and urbanization of these areas contribute to the high density of vectors [10] and thus the presence of this filarial infection in many parts of the province .Finally , from these finding we hypothesized that heartworm disease is usually present in/or imported from those areas that are endemic for canine dirofilariasis.

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