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PREVALENCE TRYPANOSOMIASIS OF STRAY DOG IN BAGHDAD CITY, IRAQ

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**RESEARCH ARTICLE****PREVALENCE TRYPANOSOMIASIS OF STRAY DOG IN BAGHDAD CITY, IRAQ****Azhar A. Faraj<sup>1</sup>, Afkar M. Hadi<sup>2\*</sup> and A.M. Al-Amery<sup>3</sup>**<sup>1</sup>Department of parasitology /College of Veterinary Medicine / University of Baghdad  
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2015**ABSTRACT**

The aim of this study was conducted to investigate the prevalence of dog trypanosomiasis. A total of 80 dogs blood smears were collected from different areas (Al-Maalif, AL-Torath, AL-Rashidia and AL-Shaab) in Baghdad city during the period from January –September 2014. The total infection rate was 43.75% (33) which divided into 44.44% (20) in males and 42.8%(15) in females. A high infection rate 55%(11) was recorded in Spring season, while the low infection rate 25%(5) was found in Winter season. Al-Maalif area showed a high infection rate 60%(12) followed by AL-Torath area 50%(10), but the low infection rate 30%(6) was recorded in AL-Shaab. *Trypanosoma evansi* was diagnosed by Iraqi Natural History Museum and Researches Center.

**Key words:**Blood protozoa, Dogs,  
*Trypanosomiasis, Trypanosoma*  
*evansi*, Iraq

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**INTRODUCTION**

Trypanosomes are flagellated protozoan, elongate and taper towards the anterior end. They are highly motile, longer and narrow than the 10mm in diameter (1). *Trypanosoma (Trypanozoon) evansi* (Steel 1885) Balbiani, 1888, is the first pathogenic mammalian trypanosome to be described in the world, in 1880, by Griffith Evans, in the blood of Indian equines and dromedaries (2). Its principal host is originally the camel but it is present in dromedaries, horses, and other Equidae as well as in a large range of other hosts. Domestic dogs and cats, opossums and rodents play on important roles in the ecology and epidemiology of *Trypanosome cruzi* (3); Also, dogs and cats are considered epidemiology important, due to the fact that they are considered reservoirs (4). The significance of a host species as a reservoirs of a vector – borne pathogen mainly depends on its prevalence of infection (3). Due to the lack of information about the dog Trypanosomiasis in Iraq this study was conducted to estimate the prevalence of trypanosome infection in stray dogs in different areas in Baghdad city.

**MATERIALS AND METHODS**

Eighty stray dogs blood smears (45 males and 35 females) were collected from different areas (Al-Maalif, AL-Torath, AL-

Rashidia and AL-Shaab) in Baghdad city, Iraq during the period from December – September 2014. A thin blood smears were prepared by placing a small drop of blood on a clean glass slide and stained with Giemsa stain, then examined under a light microscope (100 X) (5). It's particularly important to make measurements of *Trypanosoma* sp. when starting identification as (6). The color photographs were taken, diagnosis of species was carried out at Iraqi Natural History Researches center and Museum, University of Baghdad.

**RESULTS**

Total infection rate of *Trypanosoma evansi* was 43.75% (35) which divided into 44.44% (20) in males and 42.85% (15) in females. Table 1 ( fig.1).

**Table 1** The total infection rate of *Trypanosoma evansi* in dogs

Sex	No. of animals examined	Infected	Percentage (%)
Males	45	20	44.44
females	35	15	42.85
Total	80	35	43.75

**Infection rate according to seasons**

Table 2 was showed a high infection rate 55% (11) in Spring season, while a low infection rate 20% (5) was found in Winter.

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**Table 2** The total infection rate of *Trypanosoma evansi* in dogs according to seasons

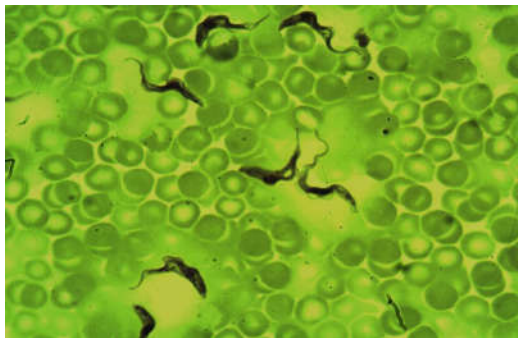
Seasons	No. of animals examined	Infected	Percentage (%)
Spring	20	11	55
Summer	20	10	50
Autumn	20	9	45
Winter	20	5	25
Total	80	35	43.75

### Infection rate according to areas

A high infection rate 60% (12) was recorded in Al-Maalif area followed by AL-Torath area 50%(10) while a low infection rate 30% (6) was found in AL-Shaab area. (Table 3)

**Table 3** infection rate of *Trypanosoma evansi* in dogs according to areas

Area	No. of animals examined	Infected	Percentage (%)
Al-Maalif	20	12	60
AL-Torath	20	10	50
AL-Rashidia	20	7	35
AL-Shaab	20	6	30
Total	80	35	43.75



**Fig. 2** *Trypanosoma evansi* in blood smear of dogs(100X)

**Table 4** Measurements of *Trypanosoma evansi* isolates from the ogs.

Lengths	Measurements	Results(µm)
T	$1.9 \times 0.005 = 0.0095$	0.095 µm
F	$0.5 \times 0.005 = 0.0025$	0.025 µm
NA	$1.7 \times 0.005 = 0.0085$	0.085 µm
PK	$0.2 \times 0.005 = 0.001$	0.01 µm
KN	$0.4 \times 0.005 = 0.002$	0.02 µm
PN	$0.6 \times 0.005 = 0.003$	0.03 µm

T: total length including free flagellum; F: free flagellum length; NA: from nucleus to anterior end; PK: from posterior end to kinetoplast; KN: from kinetoplast to middle of nucleus. PN: from posterior end to middle of nucleus

## DISCUSSION

Trypanosomiasis is generally characterized by the intermittent presence of parasites in the blood (7). Also domestic dogs may present mixed infections with the trypanosomatic in geographical areas where these species overlap, which can complicate the diagnosis of these pathogens of medical, veterinary and economic interest when diagnosis is based on routine serological tests (1).

In Iraq *T. evansi* was first diagnosed in the dogs by Chadwick 1938(8), otherwise, there were no studies in dogs; In current study stray dogs appeared a high rate of infection with *T. evansi* that risk for playing a role as reservoir hosts to transmission the infection for other animals. Although *T. evansi* can exhibit very high parasitaemia, especially in camels, horses, and dogs (and even occasionally

cattle and buffaloes), it must be considered as both a blood and tissue parasite, due to its ability to invade the nervous system, not only in horses and dogs but also in cattle, buffaloes, and pigs (9).

dogs as a species show a high reproductive capacity reflected in fast annual turnover rates attaining 68% which imply high recruitment rates of susceptible individuals ready to enter the disease transmission cycle (10).

The study revealed to high rate on infection in males than females that disagree with (11) who found that a similar prevalence of infection in both sexes as a similar susceptible to infection. Higher chance of reinfection in dogs, due to their closer contact with the vector and the peculiar characteristics of their immune system could be the cause for these differences(10).

In current study a high infection rate was found in Spring season, while a low infection rate was found in Winter that similar to (12) who revealed to seasonal effects were associated with transmission by stomoxes, which is the other name for dog fly, is also possible providing the dog is living in close contact with another infected animal.

The study revealed to differences in the infection rates according to areas that may related to abundant of vector (13) or Most of the cases are related to hunting dogs or dogs living around slaughter houses, which suggests per oral infection(14,15).

Dogs are highly susceptible to *T. evansi*, and they often exhibit strong clinical signs leading to death, sometimes within a week and most often within a month in acute cases (16), especially in stray dogs which are not treated that risk for other animals.

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