



## Proposed Method to Determine the Possible Infection Dates with Visceral Leishmaniasis (Ka) in Central Iraq

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**Abstract:** This is a very simple and easy method to determine the possible infection dates with visceral leishmaniasis (KA) in the central region of Iraq. The scientific conception of this method based on the reported cases and the occurrence time of the vectors (sand flies) in the study area in the past three decades .This method may be helped to find more information in any program to control the disease based on the tracing of the incidence date in the endemic area.

**Key words:** determination, possible, infections , dates, KA , central Iraq.

## طريقة مقترحة لتحديد تأريخ الإصابة المحتملة بمرض الشمانيا الاحشائية (الكالازار) في وسط العراق

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**الخلاصة:** هناك طريقة سهلة وبسيطة لتحديد تاريخ الإصابة المحتملة بمرض الشمانيا الاحشائية (الكالازار) في المنطقة الوسطى من العراق. إن المفهوم العلمي الذي استندت إليه هذه الطريقة يعتمد على عدد الحالات المسجلة و وقت تواجد العامل الناقل للمرض (ذبابة الرمل او الحرمس) في منطقة الدراسة خلال العقود الثلاثة الماضية . ان هذه الطريقة يمكن أن توفر معلومات أكبر لأي برنامج للسيطرة على المرض من خلال تتبع تاريخ الإصابة بها في المنطقة الموبوءة.

### Introduction

The traditional area of both visceral and cutaneous leishmaniasis in the central region of Iraq is around Baghdad

. Baghdad is the central of a circle of about 100 km a diameter of these pest diseases ( 1,2 ).

Visceral leishmaniasis, also known as kala azar, The signs of the disease are

characterized by high fever, substantial weight loss, swelling of the spleen and liver, and anaemia. If left untreated, the disease can have a fatality rate as high as 100% within two years.( 3,4 )

The highest percentage of patients are infants under two years of age and the incubation period is from 2 to 6 months. (5)

The infection period is related to the occurrence and density of the infected sand flies . The occurrence of sand flies in the central region of Iraq started from mid April till the beginning of November . Two peaks of high density were reported , the first one was in May/June, and the second one was in August/September (6) .

The possible infection dates still not clear; this is due to many factors concerning the existence of possible infected sandflies as well as the high number of possible leishmaniasis and rodents. Also the eccentric dates may be due in part to this familiarity of the disease ( 7,8 ) .

The aim of this investigation is to find simple and easy method for the determination of possible incidence date of visceral leishmaniasis in one of endemic area in Iraq may be help physicians as well as health programs makers in the country to reduce the reported cases .

### Materials and Methods

Two stations were selected in the endemic area with visceral leishmaniasis according to the followings:

- The high number of the reported cases of the visceral leishmaniasis during the three years.

- The previous studies which were conducted in the area(9,10,11) .
- The possible canine leishmaniasis.
- The high number of rodents.
- The high density of sandflies.

First one was Al-Mahmodiya about 50 km south of Baghdad. The second one was Abougreb about 30 km to the west of Baghdad. The two stations shade with orchards of date palms trees. Man activities are widely depending on poultry farms, cattle and agriculture. Schools, health centers, electricity, and transports are available in the area.

The cases were reported directly from central hospital for the children in Baghdad from 1998 to 2000, and from 1971 to 1987(Endemic Disease Institute\MOH) and from 1996 to 1999 (MOH\Iraq).

For more information of the design of this method was done after the consultations of physicians and specialists in curriculum in the ministry of Education in Iraq in order to distribute it in the health centers and schools in the rural area around Baghdad which considered as endemic area with VL .

### Results and Discussion

The reported cases of visceral Leishmaniasis in the study area during the period 1971-1987 and 1996-2000 shows that the majority of the reported clinical cases were in December, January, February, and March (Fig.1).

It was suggested that, the possible infected dates were strongly in August/September i.e. during the second peak of sand flies in the nature, when the density of flies is highest (9,10,11,12) .

The clinical diagnosis of the disease was mainly reported as infection date in hospitals. Therefore on all months of the year there were visceral Leishmaniasis

cases in Iraq, in spite of the absence of vectors and possible logic infection dates in the endemic area around Baghdad (Fig.1). The date of illness is widely dependent on the personal consideration of parents. Children in rural areas mainly passed a period of illness from several days to few weeks before visiting health centers or a physician. These lost days were mainly due to the careless parents. Some eccentric dates may be due to the asymptomatic of cases, as well as to the deficiency in medical facilities (13,14,15).

The occurrence of sand flies started from mid April till the beginning of November. Thus the possible infection dates are from April to November (2,3).

In the period occurrence of vector there are two peaks of sand flies, the first one was in May/ June (from the last two weeks of May and the first two weeks of June) and the second one was in the August /September (from the last two weeks of August and the two first weeks of September ) (2,3,10,12).

The incubation period of *Leishmania donovani* is between two to six months (5,13,14,16). The cases which were reported at April or the beginning of May, their infection dates should be in the months of November or December, in these two months the infections were impossible due to the absence of the

vector in the nature. Therefore the reported cases of April and these of May should be reviewed with peculiar care (as indicated in the proposed method).

Thus all the reported cases during 12 months in the hospitals of Iraq must be reviewed in order to perform baseline data in the epidemiological studies of this pest disease in central Iraq.

The use of the proposed method in the endemic area (Health Centers, Hospitals, Universities, Schools, etc) can be helped to perform more information about the possible infection dates of kala-azar in Iraq to the target people specially children under two years old.

Months	J	F	M	A	M	J	J	A	S	O	N	D
J 1-31		No vector in the nature	•									
F 1-28				•								
M 1-31					•							
A 1-15						•						
A 15-30	In central Iraq	Low Densit y				•		-	-	-		
M 1-15		Of vector					•	-	-	-		
M 15-30		High Densit y					•		+	+	+	+
J 1-30		Of vector						•		+	+	+
J 1-31	Of sand flies	Low Densit y							•		-	-
A 1-15		Of vector								•	-	-
A 15-31		High Densit y								•		+
S 1-30		Of vector									•	+
O 1-31	Occurrence	Low Densit y									•	-
N 1-15		Of vector										•
N 15-30		No vector in the nature										•
D 1-31												•

Figure (1) The Proposed method (+ :high probability of infections , - :probability of infections,•:date of reported cases of ( KA ).

## Reference

- 1- Adler, S. and Theodor, O. (1929 a) The distribution of sand fly and Leishmaniasis in Palestine, Syria and Mesopotamia. *Ann. Trop. Med. Paras.* 23: 269-303.
  - 2- Aul-hab, J. and Mehdi, T. (1970) Seasonal occurrence of *Phlebotomus* (Diptera, Psychodidae) sand fly of Baghdad area. *Iraq. Bull. End. Dis. Baghd.* 12: 81-94.
  - 3- Abul-hab, J. and Al-Baghdadi, R. (1972 a) Seasonal occurrence of man biting *Phlebotomus* (Diptera, Psychodidae) in the Baghdad Area. *Iraqi. Anal. Trop. Med. Paras.* 66: 165-166.
  - 4- Abul-hab, J. and Al-Hashimi, W. (1988) Night –biting activities, *Phlebotomus papatasi* Scolpi. (Diptera Phlebotomidae) In Suwira Iraq. *Bull. End. Dis. Baghd.* 29: 5-16.
  - 5- Nouri, L. and AL Jeboori, T. (1973) Kala azar in Iraq: An epidemiological and Clinical studies. *J. Face. Med. Baghdad* 15: 72-85.
  - 6- Mohsen, Z.H. and Abul hab, J. (1975) Lab. studies on the bio of *P. papatasi* scolpi (Diptera Psychodidae) *Bull. End. Dis.* 16: 33-26.
  - 7- Pringel, G. (1956) Kala-azar in Iraq: Preliminary epidemiological consideration. *Bull. End. Dis. Bagh.* 4: 275-294.
  - 8- Sukker, F. (1972): Visceral Leishmaniasis in Iraq. *Bull. End. Dis. Bagh.* 13 (4): 77-83.
  - 9- Sukker, F. (1974) study on sand flies as vectors Kala-azar in Iraq *Bull. End. Dis. Bagh.* 15(2): 85-104.
  - 10- Sukker, F. (1982) A study on sand flies in a focus of infantile kala-azar in Iraq during 1978. *Bull. End. Dis. Bagh.* 20 (4): 67-73.
  - 11- Sukker, F. (1983) Epidemiology of Leishmaniasis in Iraq. *Bull. End. Dis. Bagh.* 22(4): 35-41.
  - 12- Sukker, F. (1985): The possible of vectors infantile VL in Iraq. *Bull. End. Dis. Bagh.* 26: 27-36.
  - 13- AL-Alak, S. (1996) Study in the epidemiology of visceral leishmaniasis (kala-azar) in Al-Maghar district Missan province. *Ms. C. Thesis. Vet. College. Bagh.* pp. 77.
  - 14- Jawdat, S. Z., Ali N. A., Rifaat, L. K., Ruth, K. Y. and Al Mahdawi, S. K. (1985) Serio-epidemiological studies of Leishmaniasis in central Iraq. *J. B. S. R.* 16(1): 185-202.
  - 15- Jawdat, S. Z., Ali N. A., Rifaat, L. K. and Ruth, K. Y. (1983) The incidence of kala –azar in an endemic focus in central Iraq. *J. B. S. R.* 14: 81-87.
  - 16- Den Boer, M. L., Alvar, J. and Davidson, R. N. (2009) Developments in the treatment of visceral leishmaniasis. *Expert Opin. Emerging Drugs* 14 (3): 395–410.
- Marinkelle G (1975) Visceral *Leishmania* in central Iraq. (WHO, EM.DD 17.P.S)