Study of kala azar among children admitted to Tikrit Teaching Hospital in 2004 and 2005

Nadhim M. Muosa, Rekan S. Jumaa*, Khattab O. Mahmod**,*
**Dept. of Pediatrics, College of Medicine, Tikrit University*
***Salahaddin health office*

Abstract

Kala azar is a zoonotic infection which characterized by fever, lymphadenopathy, hepatosplenomegaly and signs of bone marrow suppression. There is significant morbidity and mortality if left untreated. The current study is a retrospective one carried out in Tikrit Teaching Hospital with study of records of 112 seropositive patients for kala azar in 2004 and 69 patients in 2005. The current work aimed to study the relation between kala azar and patient's gender, residence, and age as well as the seasonal variation of affection. Males are affected slightly higher than females in both years. District of Tuz showed the higher number of cases in 2004, while in 2005 district of Tikrit has shown the higher number of cases. High rate of affection was noted in January in 2004, while in 2005 the high rate of affection was noted in August followed by December. In 2004, the age group >1yr-2yr showed high number cases in comparison with other age groups.

Introduction

Visceral Leishmaniasis VL (kala-azar) typically affects children < 5 yr of age in the New World *(L.* chagasi) and Mediterranean region (L. infantum) and older children and young adults in Africa and Asia (L. donovani). After inoculation of the organism into the skin by the sandfly, the child may have a completely asymptomatic infection or an oligosymptomatic illness that either resolves spontaneously or evolves into active kala-azar. Children with asymptomatic infection are transiently seropositive but show no clinical evidence of disease.

Children who are oligosymptomatic have mild constitutional symptoms (malaise, intermittent diarrhea, poor activity tolerance) and intermittent fever; most will have a mildly enlarged liver. In most of these children the illness will resolve without therapy, but in approximately 1/4 it will evolve to active kala-azar within 2-8 mo. Extreme incubation periods of several years have rarely been described. During the 1st few weeks to months of disease evolution the fever is intermittent, there is weakness and loss of energy, and the spleen begins to enlarge. The classic clinical features of high fever, marked splenomegaly, hepatomegaly, and severe cachexia typically develop approximately 6 mo after the onset of the illness, but a rapid clinical course over 1 mo has been noted in up to 20% of patients in some series[1].

Aim of the study was to determine the relation between kala azar and patient's age, gender, residence and the season of affection in seropositive children attended Tikrit Teaching Hospital in 2004 and 2005.

Patients and Methods.

A retrospective study was carried out in Tikrit Teaching Hospital using only the medical records of children who were seropsitive for kala azar in the years 2004 and 2005.The sample included a total of 181 patients, (112 in 2004 and 69 in 2005).

The distribution of cases was studied according to age, gender, residence and month of the year when the diagnosis was done (time of occurrence). Data representation was done by using tables and bar charts.

Results

A total of 181 (98 males 83 females) patients were studied. M:F ratio was (1:1.1) . Their ages ranging from 1 month to 5 years. The total of all cases in 2004 was higher than that of 2005 , 112 and 69 respectively .Kala azar comprised (0.98%) of the total cases admitted to pediatric ward in 2004 (total

admission was (11,400 cases), while in 2005 kala azar comprised (0.50%) of the total admission (12,300 cases). The total of male cases of kala azar in both 2004 and 2005 were higher than female cases, male cases comprised 61 (54.5%) in 2004, while females were 51 (45.5%) . In 2005 males were 37 (53.6%), while females were 32 (46.4%)., table (1).

Regarding the distribution of kala azar according to the residence in Salahaddin governorate, the results showed that in 2004 the highest prevalence of cases were in Duz district (22 cases) followed by Al Alam area (21 cases), while in 2005 the highest level was in Tikrit district (18 cases) followed by Dijla area (16 cases). Figure (1).

The distribution of the kala azar cases according to the month of the year was represented in figure (2), which showed that the highest number of cases in 2004 was in January followed by February, while in 2005 the highest number was in August followed by December.

In regard to the distribution of kala azar according to the age of children, the results showed that the highest number of cases in 2004 was in the age group >1yr-2yr (49 cases), the lowest number was in the age group >3yr-4 yr (7 cases), while in 2005 the highest number was in the age group 1m-1yr (25 cases) and the lowest was in age group > 3 yr-4 yr (4 cases), as shown in Table (2).

Discussion

Kala azar was first reported for the first time in Iraq in 1916, and known to be endemic in 1954, two main species of sandfly vector are suspected in Iraq, phlebotomus papatasi and p. alexandari, the main reservoir in Iraq are jackals and dogs [2]. The current study included total of181 patients, their age from less than one year to five years.

Regarding the gender of patient, the results showed that male:female ratio was 1:1.1. There was no significant difference in distribution of cases in males and females in both years, which is similar to other studies, as in Tunisia which showed that there is no significance between males and females in distribution of kala azar [3].

In regard to the patients residence the results showed that in 2004 the high rate of affection occurred in Tuz, Sharqat and Alam, but 2005 these area showed low levels of affection probably because of the campaigns carried out by Salahaddin health office of health education about the ways of disease transmission. But in Tikrit it showed relative approximate figures of both years. A study done in Basra showed that the suburban semirural area is at highest risk of infection compared with other areas[4]. In a study done in Lebanon, there was no practical evidence of kala azar in both rural and urban areas[5]. A study done in Nassiryah, Iraq in 2003 showed high figures in urban areas as well as the rural areas.[8]

With respect to the age of the patient, it is found that there is a higher figure in the age group 1-2 yrs in 2004 and increased number in age group 1m-1yr in 2005, this could be explained by the fact that kala azar mainly affects children less than 5 years in the Mediterranean areas and the areas near it[1]. This result is in agreement with a study done in Italy which showed that (74.1%) of patients were < or = 3 years old[6]

The highest percentage of cases occurs in the January and lowest percentage in May and June. This result is similar to the result of endemic diseases institute in Iraq because the transmission of disease probably occurs around September and the vector density occurs also in September that suggests the appearance of the peak cases of kala-azar in the first months of the winter season[7]. This is in agreement with a study in Nassiryah, Iraq, which showed high percentage of cases in January and February[8].

References

1. Peter C. Melby, in:Chapter 282: Richard E., Md. Behrman , Nelson's Textbook of Pediatrics, 18th edition, USA: W.B. Saunders; 2008. P1469-1470 .
2. Qusay A. Al-Rahim, kala azar in children, *Baghdad Medical Journal,* 1994; 36(1): 15-20.
3. Ben Salah A, Ben Alaya Bouafif, Chlif S, Gharbi A, Bel Haj Hamida Z, Risk factors of leishmanin-skin test positivity in transmission of Leishmania infantum in the center of

Tunisia. *Arch Inst Pasteur Tunis.* 2003;80(1-4):17-27.

4. Yacoub AA, Baker S, Hameed AM, Althamery AA, Fartoci MJ. Seroepidemiology of selected zoonotic infections in Basra region of Iraq. *East Mediterr Health J.* 2006 Jan-Mar;12(1-2):112-8.
5. Nuwayri Salti A, Baydoun E, el Tawk R, Fakkoury Makki R, Knio K, The epidemiology of leishmaniases in Lebanon. *Trans R Soc Trop Med Hyg.* 2000 Mar-Apr;94(2):164-6
6. Di Martino L, Gramaccia M, Occorsio P, Di Muccio T, Scalone A, Gradoni L. Infantile visceral leishmaniasis in the Campania region, Italy: experience from a Paediatric Referral Centre. *Parassitologia.* 2004 Jun;46(1-2):221-3.
7. Thayer A, Clinical and laboratory study of kala azar in Thiqar (Iraq); 2004: 12-13.
8. A.K. Jassim, R. Maktoof, H. Ali, B and K. Campbell. Visceral Leishmaniasis control in Thi Qar Governorate,Iraq in 2003. *Eastern Mediterranean Health Journal,* 2006. Vol. 12 (Supplement 2):234-235.

Table (1): Distribution of frequency of kala azar in males and females in 2004 – 2005.

Gender		Year		Total	
		2004	2005	No.	%
Male	No.	61	37	98	*54.1*
	%	*54.5*	*53.6*		
Female	No.	51	32	83	*45.9*
	%	*45.5*	*46.4*		
Total	No.	112	69	181	*100*
	%	*100*	*100*		

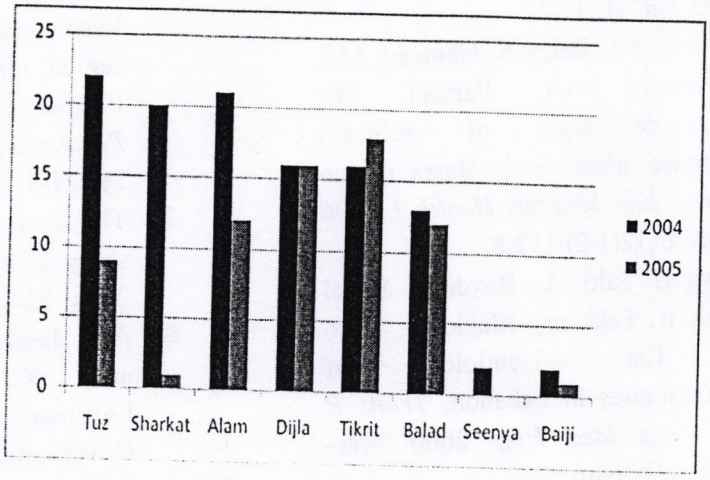

Figure 1: Frequency distribution of kala azar according to residence among children in 2004 and 2005.

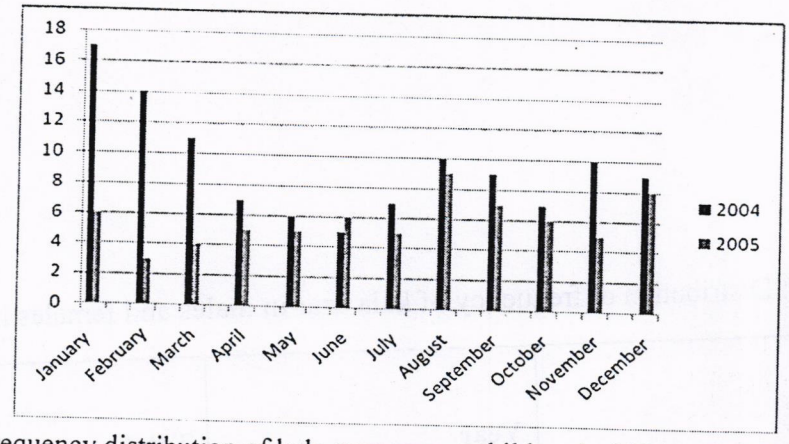

Figure 2 : Frequency distribution of kala azar among children in 2004 and 2005 in Tikrit Teaching Hospital according to the seasonal variation.

Table (2): Distribution of cases according to age.

Age	Year				Total
	2004		2005		
1m-1yr	No.	36	No.	25	61
	%	*32.1*	%	*36.2*	*33.7*
>1yr-2yr	No.	49	No.	21	70
	%	*40.1*	%	*30.4*	*38.7*
>2yr-3yr	No.	11	No.	11	22
	%	*9.9*	%	*16*	*12.1*
>3yr-4yr	No.	7	No.	4	11
	%	*6.2*	%	*5.8*	*6.1*
>4yr-5yr	No.	9	No.	8	17
	%	*8.03*	%	*11.6*	*9.4*
Total		112(*61.9%*)		69(*38.1%*)	181(*100%*)