

Detection of Leishmania Parasite in Sero-Positive Individuals in Tabark Allah Village, Esatern Sudan.

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Abstract: A study was conducted to detect *Leishmania donovani* in sero-positive individuals and to describe the patients by age and sex in Tabark Allah village, eastern Sudan. Sixty four individuals with positive direct agglutination test were examined by lymph node aspiration test using Giemsa's stain. Amastigotes of *Leishmania* parasite were detected in 49(76.6%) of the study group. Majority of true positives were children less than fifteen years old. Males were more frequent than females. Direct Agglutination Test is considered as an assumptive test and it is suitable to be used in epidemiological surveys.

Key Words: Agglutination, Aspiration, donovani, Lymph, Leishmania, Node,

I. Introduction

Leishmaniasis is a group of protozoan diseases caused by certain species of genus *leishmania* and transmitted by 30 species of sand fly [1]. It is a common disease in less developed countries with approximately 500,000 new cases each year [2], more than 90% of which are found in the Indian subcontinent, Sudan and Brazil [3].

In Sudan the causative agents are *L. donovani* and *L. Infantum* and the principal vector is *phlebotomus orientalis* while the animal reservoirs are dog, monkey and fox [4]. Visceral leishmaniasis or kala-azar is of major importance in Sudan leading to thousands of deaths [5]. Since 1900s visceral leishmaniasis has been considered one of the important health problems in Sudan, especially in eastern and central regions [4].

The direct agglutination test (DAT) has proved to be a very important sero-diagnosis tool for the diagnosis of visceral leishmaniasis [6]. Diagnosis is based on demonstration of *Leishmania donovani* bodies in smears obtained from bone marrow, lymph nodes, spleen, liver and skin snap smears. Looking for parasites in the spleen and liver is one of the most accurate methods available. About Ninety percent of the active cases show parasites in splenic and liver aspirates [7]. Lymph node aspiration test could detect 80% of cases [4]. Although the disease infects all age groups, it is more frequent in children younger than 15 years [8]. It has been reported that males were more affected than females due to behavioural characteristics [9].

II. Materials And Methods

Study area

The study was carried out in Tabarkallah village, eastern Sudan. It is located at approximately 120 km south Gedaref town. The area is one of leishmaniasis endemic zones in Sudan and witnessed several outbreaks in the previous years.

Lymph node aspiration Test

Lymph node aspiration test (LNAT) was applied on sixty four individuals (37 males and 27 females). They were positive Direct Agglutination Test (DAT) in a survey conducted in the village before our study. Smear samples were collected from inguinal lymph nodes, stained with Giemsa's stain and examine under the microscope for the presence of amastigotes.

III. Results

The findings showed that 49(76.6%) of sero-positive individuals were positives when they were subjected to lymph nodes aspiration test (LNAT) as illustrated in table 1. Age distribution of serpositive individuals according to the result of lymph node aspiration test showed that ninety percent (90%) of children (<15) were positives, followed by age group 15–24years, ($p=0.054$). Breakdown of the data by sex showed that the percentage of infection in males was (78.4%) compared to 74.1% among females using lymph node aspiration test (LNAT), ($OR = 1.2688$, $95\% CI: 0.3964 - 4.0613$) as presented in table 3.

Table (1): The yield of lymph nodes aspiration test (LNAT) for visceral leishmaniasis, in Tabark Allah village, Gedaref state 2010. (n = 64).

LNAT	No	%
positive	49	76.6%
negative	15	23.4%
Total	64	100%

Table (2): Age distribution of study group according to the result of lymph node aspiration test in Tabark Allah village, Gedaref state 2010. (n = 64)

Age	Lymph nodes aspiration test				Total	
	positive		negative			
	No	%	No	%	No	%
< 15	27	90%	3	10%	30	46.9%
15 – 24	12	75%	4	25%	16	25%
25 – 34	3	50%	3	50%	6	9.4%
35 – 65	7	58.3%	5	41.7%	12	18.7%
Total	49	76.6%	15	23.4%	64	100%

$$X^2 = 7.622$$

$$P = 0.054$$

Table (3): Sex distribution of of study group according to the result of lymph node aspiration test in Tabark Allah village, Gedaref state 2010. (n=64)

Sex	Lymph nodes aspiration test				Total	
	positive		negative			
	No	%	No	%	No	%
Male	29	78.4%	8	21.6%	37	57.8%
Female	20	74.1%	7	25.9%	27	42.2%
Total	49	76.6%	15	23.4%	64	100%

$$\text{Odds ratio (OR)} = 1.2688$$

$$95\% \text{ confidence interval(CI)} = 0.3964 - 4.0613$$

IV. Discussion

Lymph node aspiration is by far the easiest and most convenient method and is recommended for use in hospitals and in the field. The technique was introduced in Sudan in 1940 by Kirk and Sati. About 64 individuals with DAT positives were considered as suspected cases. Approximately, 76.6% of them were confirmed with lymph node aspiration test. The yield of lymph node aspiration test (LNAT) for visceral leishmaniasis that was achieved by LNAT is closed to standard as the test, usually; detect 80% of cases [4]. There was statistical significant association between visceral leishmaniasis and age of individual ($p = 05$). The children were more affected than adults. This result agrees with findings of several studies which they mentioned that the disease is more frequent in children. In Um-Salala village, Sudan, Zijlstra and Elhassan (2001) found that 50% of infected individuals were in age group 5 – 15. Also the World Health Organization reported in 2007 that children under the age of 15 years are the most severely affected age group. These supported also by a study conducted In Venezuela, 80.6% of infected persons were younger than 15 years [8]. The high distribution of visceral leishmaniasis among certain ages lead to a question whether this is due to immunological factors or their activities and habits which render them to be exposed to infection more than others. However the vector of the disease is present indoors and outdoors and its activity during the daytime and at night too.

Visceral leishmaniasis affects both sexes, but a higher frequency of the disease in males has been found in many studies [10] [11]. In the present study more males were positives when we used lymph node aspiration. Many previous studies explained that the reason for a higher rate of visceral leishmaniasis in males has been attributed to the intensive activity of males outdoor in agriculture and forests, and they have been exposed to sand fly biting.

V. Conculosion

Lymph node aspiration test could detect leishmania donovani in ser-positive individuals. The direct agglutination test is considered as initial test to sort suspected cases of visceral leishmaniasis and is suitable for epidemiological survey.

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