

Estimation of immunoglobulin (IgG and IgM) in sera cutaneous leishmaniasis patients (*L.donovani* and *L. infantum*) in Baghdad city

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Abstract :

Leishmaniasis are parasitic diseases caused by protozoan flagellates of the genus *Leishmania*, parasites infecting numerous mammal species, including human. Baghdad city regarded as endemic area for cutaneous leishmaniasis, so an experimental study was done in Baghdad city, the sample taken from the patients cutaneous leishmaniasis attending dermatologic clinic in Baghdad Teaching Hospital and Al Yarmouk Teaching Hospital during the period from first of October 2017 to the first of February 2018. Ninety blood samples were collected from infected and suspected people with cutaneous leishmaniasis, which were confirmed by laboratory tests because they were all infected by amastigote form of cutaneous leishmaniasis, as well as the data clarified there are a shared rate among people with cutaneous leishmaniasis and visceral leishmaniasis represented by *L.donovani* was (10, 11.1%), while *L.infantum* was (40, 44.4%).

Key words: Visceral leishmaniasis, *Leishmania infantum*, Cutaneous leishmaniasis.

Introduction

Leishmaniasis, is a vector-borne disease caused by obligate intra-cellular protozoa of the genus *Leishmania*, is characterized by diversity and complexity ⁽¹⁾. Leishmaniasis is a community health problem in 98 countries, There is an annual occurrence of almost two million new cases reported each year ⁽²⁾. the greatest severe form of disease is visceral leishmaniasis, as well known as kalaazar, in which parasites disseminate to the liver, spleen and bone marrow. Symptoms involve high fever, hepatosplenomegaly, , hypergammaglobulinemia and pancytopenia, and the disease is lethal if untreated. Visceral leishmaniasis is produced by *L. donovani*, *L. infantum* and *L. chagasi* ⁽³⁾. Cutaneous parasites such as *L. tropica* can cause visceral infections. There are a number of clinical reports from visceral leishmaniasis patients in which the causative agent was identified as *L. tropica* in India ⁽⁴⁾ the Middle East ⁽⁵⁾⁽⁶⁾ and Africa ⁽⁷⁾. Visceral leishmaniasis is commonly initiated in central Iraq but has extended to southeastern parts also, after the Gulf War. *L. donovani* and *L. Infantum* are the causative agents, with 90% of the cases described in children under five years of age, and it is spread through the *P. alexandri* species of sandfly ⁽⁸⁾. Diagnosis of V.L depend on the clinical signs and symptoms and can be identified by serological tests and isolation of *leishmania* parasite. Diagnosis of visceral leishmaniasis can be confirmed by ELISA, Direct agglutination test (DAT), Indirect fluorescent antibody test (IFAT) and molecular techniques PCR ⁽⁹⁾⁽¹⁰⁾.

Materials and Methods

After sterilized the area of aspiration of blood from cubital fossa vein by alcohol 70%, a blood specimen (5ml) collected from each patients. The collected sample was transported directly into 2 tubes one (2ml) for complete blood count to measure haemoglobin level and platelet count and other for serum isolation to detect total IgM, IgG of *Leishmania infantum* and *Leishmania donovani*, and directly stored under -40°C until used for serological tests.

Direct microscopic examination of cutaneous leishmaniasis by giemsa stain in which the specimen from the cutaneous lesion was made by fine needle aspiration according to ⁽¹¹⁾.

Serological diagnosis of visceral leishmaniasis done by ELISA and IFAT according to⁽¹²⁾ and by Rapid test rK39 made according to⁽¹³⁾.

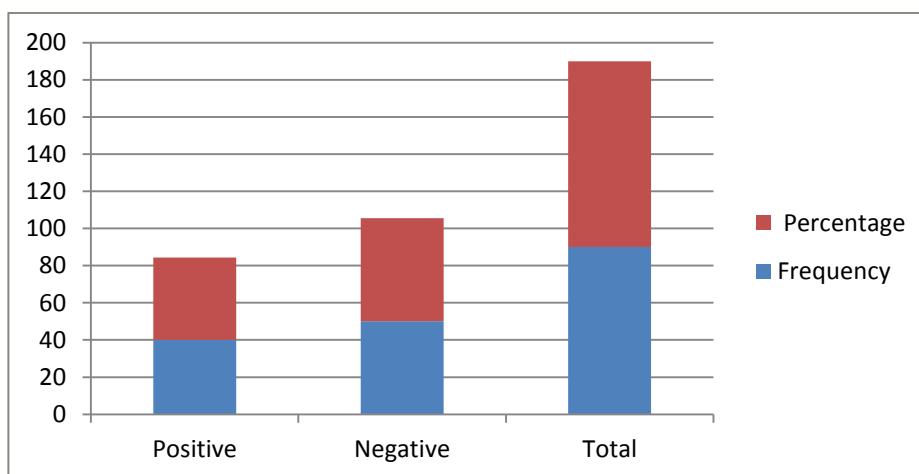
Results

Results in table (1) shown the percentage of patients infected with *Leishmaniadonovani*(*L.donovani* IgG positive) among cutaneous leishmaniasis patients was a 11.1% with highly Significant difference (P= 0.048).

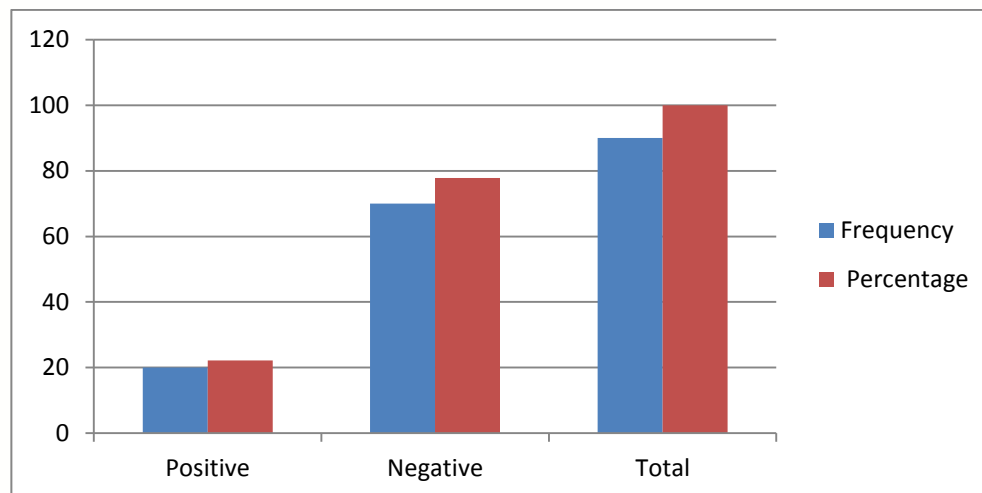
Table (1) Percentage of V.L patients(*L.donovani* IgG and IgM) among C.L patients.

<i>L.donovani</i> IgG	Frequency	Percentage
Positive	10	11.1
Negative	80	88.9
Total	90	100%

Data documented in Figure(1) shown the number and percentage of patients infected with *L. infuntum* among C.L patients where the number and percentage of patients had infected with previous and recent infection(total IgM and IgG) by *L. infuntum* were (40, 44.4%),while data documented in Figure(2) .Shown the number and percentage of recent infection IgM were (20, 22.2%).



Figure(1) Percentage of V.L patients(*L. infuntum* IgG and IgM) among C.L patients.



Figure(2) Percentage of V.L patients(*L. infantum* IgM) among C.L patients.

Discussion

This study showed that the prevalence of V.L among C.L patients caused by *L. donovani* IgG positive (11.1%). The current finding was consistent with⁽¹⁴⁾⁽¹⁵⁾⁽¹⁶⁾ At that time, eleven isolates of C.L were confirmed by molecular sequence and they were found to be caused by *L. donovani*. This results were in agreement with⁽¹⁷⁾ where shown Previously in , multilocus enzyme electrophoresis (MLEE) characterization of a small number of isolates led to the surprising conclusion that CL in Sri Lanka was caused by *Leishmania donovani*. This reason may return to the vector transmit the parasite that causes cutaneous and visceral leishmaniasis. Special cases of CL due to *L. donovani* have been described in other VL-endemic regions⁽¹⁸⁾. Also our study revealed that the prevalence of V.L among C.L patients caused by *L. infantum*, in this our study demonstrated that infection by *L. infantum* were recent and previous infection together at the same time and confirmed by immunofluorescent test to be sure the infection recent or previous the results were most of them recent. This result was corresponding to the results of⁽¹⁹⁾ revealed case report 47 years male in Southern Israel had Cutaneous leishmaniasis, but by molecular sequence clarified the causative agent was *L. infantum*. Although the main reason for the Cutaneous leishmaniasis were *L. tropica* and *L. major* in these area. Also our results were in agreement with⁽²⁰⁾ They achieved a study on humans and sand flies in the CL focus in Cukurova, region where, according to, the local/ health centers, hundreds of human cases continue to occur every year. Amazingly the causative agent of human CL was identified as *L. infantum*. They similarly found 13 *Phlebotomus tobbi* infected with *L. infantum*, and confirmed that human isolates of *L. infantum* from the study area are identical to isolates from *P. tobbi*. Our results that revealed mixed infection Cutaneous and Visceral may be caused by the vector itself may transfer both infection. Our result was in agreement with what was reported by⁽²¹⁾ shown *L. infantum* is reported to cause cutaneous leishmaniasis and visceral leishmaniasis in Syria, but in⁽²²⁾ Only causes cutaneous leishmaniasis in Lebanon

Conclusion

Current study is conclude that most cutaneous leishmaniasis patients are more likely, than the others to have visceral leishmaniasis.

Recommendations

For further studies we recommend that a large sample size should be examined to confirm this work and we suggest to make liver function tests and other biochemical markers to get specific diagnosis of visceral leishmaniasis.

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