



Visceral Leishmaniasis- A Rare Cause of FUO in This Part of the Country

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Abstract

Leishmaniasis is a poverty-related disease with two main clinical forms: visceral leishmaniasis and cutaneous leishmaniasis. An estimated 0.7–1 million new cases of leishmaniasis per year are reported from nearly 100 endemic countries. WHO lists leishmaniasis as one of the neglected tropical diseases for which the development of new treatments is a priority. Major evidence gaps remain, and new tools are needed before leishmaniasis can be definitively controlled. Clinicians commonly refer to any febrile illness without any obvious etiology as fever of unknown origin (FUO). Visceral Leishmaniasis is a rare parasitic cause of FUO in this part of country. Visceral Leishmaniasis is also called as kala-azar (black fever) in the Indian subcontinent.

Keywords: Visceral Leishmaniasis, Fever Of unknown Origin (FUO), Kala-Azar.

Introduction

Leishmaniasis is caused by a unicellular eukaryotic obligatory intracellular protozoa of the genus *Leishmania*. It primarily affects host's reticuloendothelial system. *Leishmania* species produce widely varying clinical syndromes ranging from self-healing cutaneous ulcers to fatal disease. Leishmaniasis are vector-borne parasitic diseases caused by at least 20 species of the genus *Leishmania*, and are transmitted between mammalian hosts by female sandflies. The outcome is determined by the interplay of the following: parasite characteristics, vector biology, and host factors, with immune responses taking centre stage among the host factors^[1]. In the Indian subcontinent, transmission occurs peridomestically in the alluvial plains of the Ganges river, typically an altitude below 700 m^[2]. These areas have heavy monsoon rains, high humidity, temperatures between 15°C

and 38°C, abundant vegetation, and subsoil water^[3]. India, Nepal, and Bangladesh used to have more than 50% of the global burden of visceral leishmaniasis. In 2005, these countries committed to eliminate visceral leishmaniasis as a public health problem by 2015, a deadline that has been subsequently extended. Visceral leishmaniasis—caused by *L. donovani* in Asia and Africa and *Leishmania infantum* in the Mediterranean Basin, the Middle East, central Asia, South America, and Central America—is the most severe, systemic form that is usually fatal unless treated. *Leishmania* organisms occur in two forms:

Extracellular, flagellate promastigotes in the sand fly vector and intracellular, nonflagellate amastigotes in vertebrate hosts including humans. Promastigotes are introduced through the proboscis of the female sand fly into the skin of the vertebrate host.

Neutrophils of the host first take up the promastigotes at the site of parasite delivery.

The infected neutrophils may undergo apoptosis and release viable parasites that are taken up by macrophages and dendritic cells. The parasites multiply as amastigotes inside macrophages, causing cell rupture with subsequent invasion of other macrophages. While feeding on infected hosts, sandflies pick up amastigotes, which transform into the flagellate form in the fly's posterior midgut and multiply by binary fission; the promastigotes then migrate to the anterior midgut and can infect a new host when flies take another blood meal. The incubation period varies from 3 to 8 months^[4].

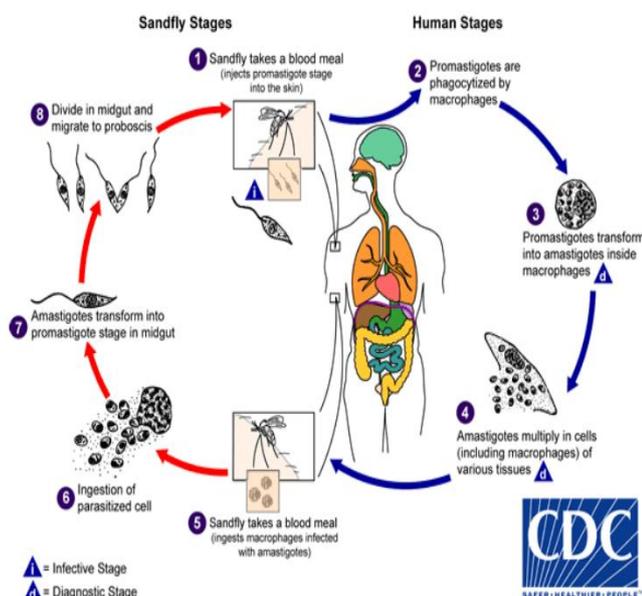


Fig-1 life cycle of Leishmaniasis

The most common presentation of visceral leishmaniasis is an abrupt onset of moderate to high grade fever associated with rigors and chills. Fever may continue for several weeks with decreasing intensity and may become afebrile before experiencing another bout of fever. The spleen may become palpable by the second week of illness. Hepatomegaly may also occur. Hypoalbuminemia may manifest as pedal edema and ascites in advanced stage of illness. Anemia may occur and can lead to congestive heart failure. Bleeding manifestations may occur due to thrombocytopenia. In the Indian subcontinent, hyperpigmentation of the skin is probably a result of cytokine induced

increased production of adreno corticotrophic hormone^[5], leading to the Hindi name kala-azar, which loosely translates to black fever.

Case Report

A 25 year old young male patient presented with fever of 3 months duration. The fever is high grade intermittent, associated with chills and rigors. On examination patient had anemia, splenomegaly cervical lymphadenopathy and pedal edema. His routine blood investigations revealed Haemoglobin 6.7gm%, total WBC count of 9000cells/cumm, platelet count of 92000 cells/cumm. Smear for malarial parasite was negative, WIDAL test was negative, blood urea, serum creatinine was within normal limits. LFT was also normal. Patient was treated with antimalarials and other antibiotics. But patient still had fever and meanwhile patient developed abdominal distension and facial puffiness. His chest x-ray was normal. 2D ECHO was also normal. His serum total proteins were 5.8gm/dl and serum albumin was 2.8 gm/dl. Ultrasound abdomen showed hepatosplenomegaly. HIV test was nonreactive. Hemogram with peripheral smear revealed pancytopenia. Bone marrow aspiration study was done which revealed Donovan bodies of Leishmania. Later splenic aspirates showed amastigote forms which was suggestive of visceral leishmaniasis.

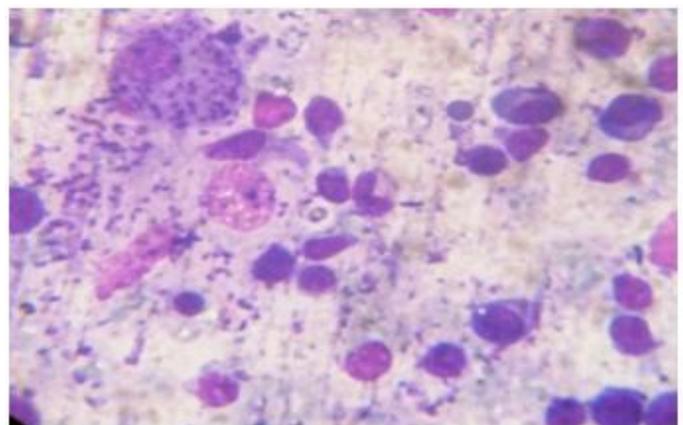


Fig-2 Multiple Donovan bodies on peripheral smear

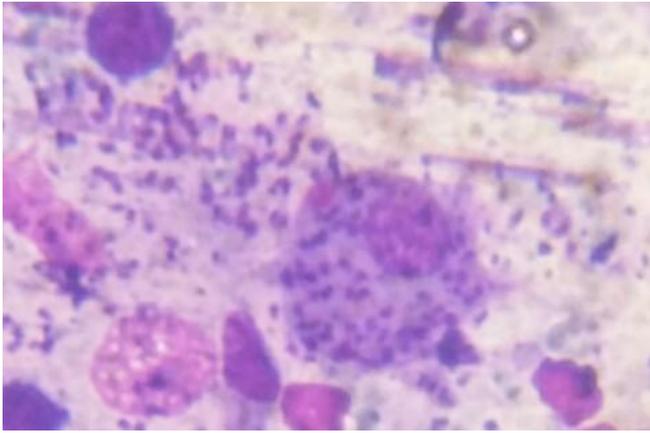


Fig-3 Multiple amastigotes engulfed by a macrophage

Discussion

25 year old young male patient presented with fever of 3 months duration which is of high grade, intermittent, associated with chills and rigors with hepatosplenomegaly, cervical lymphadenopathy, anaemia, pedal oedema, abdominal distension and on investigations found that initial anemia with thrombocytopenia and later found pancytopenia with bone marrow aspiration studies showed Donovan bodies of leishmania with splenic aspirates showing amastigote forms which was suggestive of leishmaniasis. Patient was initially treated with antimalarial drugs in view of malaria and other higher antibiotics but patient still had febrile episodes in hospital. He was given 3 units of blood transfusions during hospital stay to correct anemia. Patient was treated with liposomal Amphotericin B with the dose of 3mg/kg on days 1-5, 14 and 21. There was improvement in patient's condition and fever also subsided.

High index of suspicion should be maintained to rule out HIV infection in a patient with Leishmaniasis. Visceral Leishmaniasis is easily mistaken for malaria. Other febrile illness that mimic Leishmaniasis include typhoid fever, tuberculosis, brucellosis, schistosomiasis, and histoplasmosis. Fever with neutropenia or pancytopenia in patients from an endemic region strongly suggest a diagnosis of Visceral Leishmaniasis. In nonendemic countries, a careful travel history is essential when any patient presents with fever.

Conclusion

Visceral Leishmaniasis is one of the parasitic causes of fever of unknown origin (FUO). Leishmaniasis is rare in this part of the country. Even though patient travel history and occupational history didn't give a suspicion bone marrow examination was suggestive of Leishmaniasis. Hence rare causes of FUO should be considered by proper history and extensive investigative work up.

FUO is a physician's nightmare. Rare causes should always be considered by a diligent physician. When he is dealing with a case of FUO in tropics patient should also be evaluated for rare protozoal infections.

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