Visceral leishmaniasis: A case report

Sachin Gawade[1], Mangesh Nanaware[1], RM Gokhale[1], PS Adhav[1]

Department of Community Medicine [PSM], B.J. Medical College,

Sassoon General Hospital, Pune, Maharashtra, India

CASE REPORT

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Corresponding Author:
Dr Mangesh B. Nanaware
Assistant Professor, Department of Community Medicine (PSM), B.J. Medical College, Sassoon General Hospital, Pune, Maharashtra, India Pin- 411001
Email:dr.mangeshnanaware@gmail.com

Abstract

Although leishmaniasis is widely prevalent in the eastern states of India namely Bihar, Jharkhand, Uttar Pradesh and West Bengal, diagnosing the illness is still difficult. We present a case of a 20-year-old agricultural labourer with a history of recurrent fever, progressive weakness and abdominal discomfort associated with loss of appetite for six months followed by petechial hemorrhages over body.

On examination there was hepato-splenomegaly. A diagnosis of visceral leishmaniasis (kala-azar) was made based on the bone marrow aspiration cytology and epidemiological history of the illness. Routine blood investigations showed pancytopenia and a chest X-ray was normal. The patient was treated by intravenous administration of amphotericine B, the patient responded favourably to treatment.

Key Words

Visceral leishmaniasis, kala-azar, amastigote, Leishmania donovani.

Background

Visceral leishmaniasis (kala-azar) is a slowly progressing indigenous disease caused by a protozoan parasite of genus *Leishmania*. Leishmaniasis is a parasitic disorder transmitted by the bite of an infected female phlebotomus sand fly in developing countries. [1, 2] The disease is transmitted by sand flies, which inoculate the flagellated promastigotes into the skin of the host. [3]

In human beings, the disease presents in four different forms with a broad range of clinical manifestation: visceral leishmaniasis, or kala-azar; cutaneous leishmaniasis; mucocutaneous leishmaniasis; and diffuse cutaneous leishmaniasis.[4]

Leishmania donovani is not known to be endemic in the state of Maharashtra. The nearest suspected but unproven endemic area is Goa.[5] Most cases diagnosed here have been residents of, or have a history of travel to, a known endemic area in the north-eastern part of the country. However, isolated cases from the city of Bombay have been reported.[6]

The life cycle of Leishmania involves two forms, the promastigote which develops and lives extracellularly in the sandfly vector and the amastigote which multiplies intracellularly in the reticulo-endothelial cells of the host. Mammals including rodents, dogs and foxes are the reservoirs of infection. In India where visceral leishmaniasis or kala azar is endemic, man is the main or the only source of infection. [7,8]

In India visceral leishmaniasis or kala-azar is prevalent in the eastern states having a hot and humid climate. The amastigote form of the parasite primarily infects the reticuloendothelial system and may be found in abundance in the bone marrow, spleen and liver. It lowers immunity, causes persistent fever, anaemia, liver and spleen enlargement, and if left untreated, death may occur due to opportunistic infection. The vector thrives in cracks and crevices of mud-plastered houses, poor housing conditions, heaps of cow dung, in rat burrows, in bushes and vegetations around the houses. They seek shelter in animal burrows, tree buttresses or holes, caves, rocks and other protected habitats, including human habitations. Generally weak flyers, they usually fly close to the ground in short hops. [9,10]

Diagnosis of visceral leishmaniasis is made by clinical features of the disease in an endemic area confirmed by either demonstration of the parasite in the spleenic aspirate

or indirect tests. Presently the RK 39 test kit is widely used.[11]

Until the early 1990s, pentavalent antimony was the only first-line drug with a well-documented record of success in the treatment of visceral leishmaniasis.[12]

Case details

A 20-year-old male patient residing at Bandha village from Achham District, state Mangalsen in Nepal, who was an agricultural labourer, was referred by the Government Hospital, Kolhapur for management of 'visceral leishmaniasis'. The patient was admitted to our hospital in July 2011 complaining of recurrent fever with chills for six months, progressive generalised weakness for five months and loss of appetite for one month. Rashes were present all over the body for one month. In Nepal, the patient was apparently fine seven months earlier, when he started complaining of fever with chills on and off. He took local symptomatic treatment (paracetamol for fever and multivitamins) for about one month but did not get any relief and gradually started developing weakness.

Then he shifted to 'Shevgaon' in 'Ahmednagar' State Maharashtra, where he was admitted to a private hospital for a period of two weeks. But there was no improvement so he opted for the Government Hospital, Aurangabad where he took treatment for 10-12 days but did not get relief. Weakness and abdominal discomfort progressed. After discharge against medical advice, the patient stayed at Ahmednagar (State-Maharashtra) for about three months and had some local treatment (allopathy) for symptomatic relief.

With discontinuation of treatment, the symptoms worsened and again the patient was admitted to private hospital in Wadgaon, dist Kolhapur (State Maharashtra) for 15-16 days where he was investigated for bone marrow aspiration and diagnosed to have 'visceral leishmaniasis', meanwhile he started developing petechial haemorrhages (Figure 3) all over the body then he was referred to Government Hospital Kolhapur. From there the patient was referred to Sassoon General Hospital Pune for further management. There was no history of haematemesis, malena, diarrhoea, abdominal pain, evening rise of fever, chest pain, headache, body ache, joint pain, hypochondriac pain, lymphadenopathy, and bone pain.

On general examination the patient had moderate pallor, no icterus, cyanosis and lymphadenopathy. On abdominal examination, the liver was palpable about 2cm right below costal margin and spleen was palpable up to 7cm below the left costal margin (Figure 2). Examination of the other systems was unremarkable. Routine haematological investigations revealed pancytopenia with haemoglobin level of 7g/dl. Morphological structure of red blood cells was normocytic hypochromic with thrombocytopaenia (platelet count 63000/ml). Tuberculin test for Tuberculosis, Widal test for enteric fever and blood culture for Brucellosis was negative. Bone marrow smears revealed abundance of amastigote forms of Leishmania donovani (also known as LD bodies) both intracellularly within the macrophages as well as extracellularly (Figure 1).

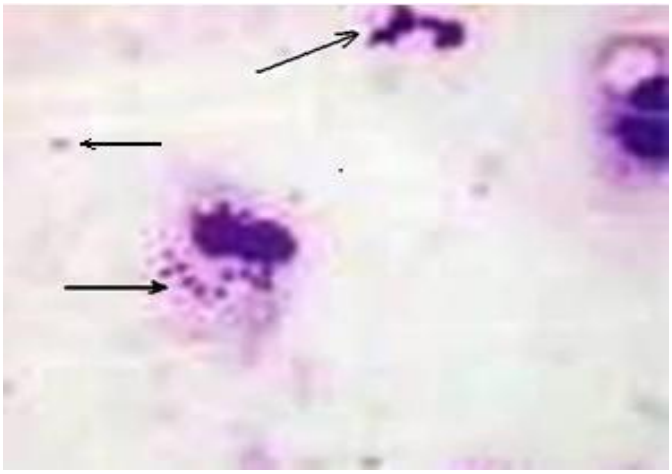

Figure 1: Showing amastigote form of *Leishmania donovani* in bone marrow smear

The patient was treated on the day of admission with Inj. Amphoterecin B-50mg in 5% dextrose over eight hours, (two points of normal saline prior to Amphoterecin B & two points of DNS after Amphoterecin B,) Inj hydrocort 100mg stat, one point of whole blood over eight hours along with tab.septran,Ranitidine,multivitamin, FSFA was given twice a day. Amphoterecin B- 50mg in 5% dextrose over eight hours, tab. septran, Ranitidine, multivitamin, FSFA continued up to three weeks.

After one week of follow-up the patient showed a good response to this treatment, his appetite improved, there were no petechial rash, fever or vomiting. Platelet count increased up to 69000/ml.

Discussion

The disease visceral leishmaniasis was first described in 1824, in Jessore district, Bengal in what is now called Bangladesh.[14] Although visceral leishmaniasis is endemic in 62 countries, 90% of the estimated 500,000 new cases, which occur annually, are confined to the rural areas of India, Nepal, Bangladesh, Sudan and Brazil; as many as one-half of these cases occur in India.[18] There are 30-100 subclinical infections for every overt case of visceral leishmaniasis.[19] In India, kala-azar is believed to be confined

to the north-eastern part of the country.[16,17] It is uniformly fatal unless treated. The incubation period of kala-azar ranges in between 10 days to 2 years.[26]

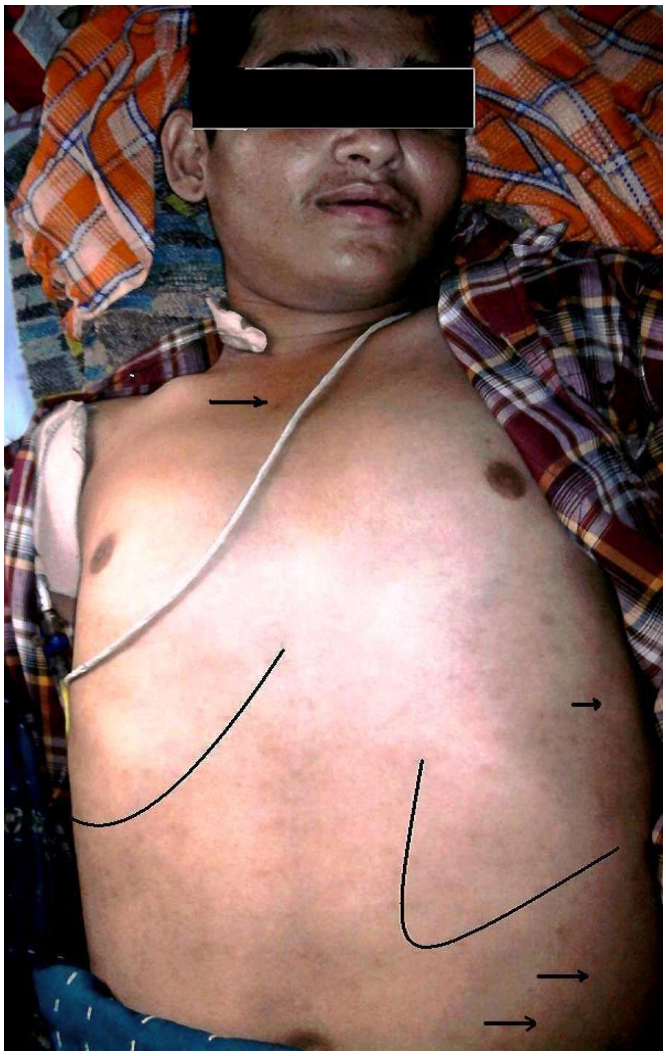

Figure 2: Enlarged liver & spleen along with petechial haemorrhages over chest and abdomen

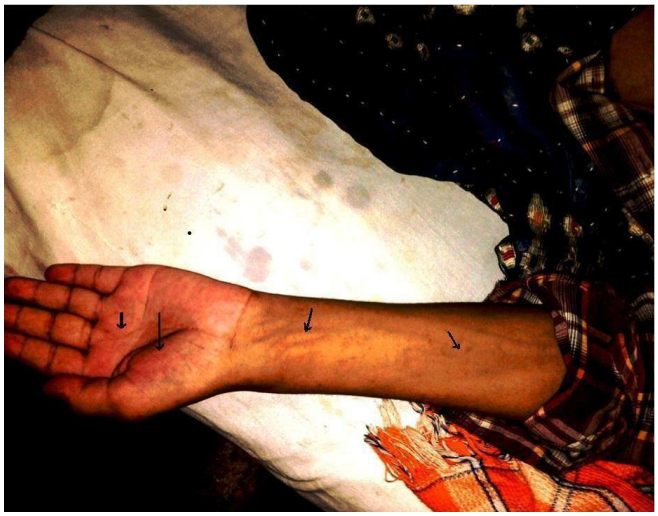

Figure 3: Petechial haemorrhages over left forearm and hand

Long incubation periods, up to 10 years have been occasionally reported, [20] related to the clinical outcome of asymptomatic infection following immune system alteration. Sub-clinical form of visceral leishmaniasis characterised as non-specific mild clinical manifestations lasting for more than three weeks including fever, cough, diarrhoea, malaise, mild hepatomegaly and eventually splenomegaly presenting as fluctuating course that evolves over a prolonged period of time. Anaemia is the major and most frequent haematological sign, generally of normocytic and normochromic type. [15]

A cohort study was planned in Brazil from January 1998 to December 2000 on 784 children aged between 0-5 years to study clinical-laboratory profile of the sub clinical form of visceral leishmaniasis. [21]

Diagnosis visceral leishmaniasis remains difficult in the early infection phase before the classical triad of fever, splenomegaly and pancytopenia appears. That leads to considerable delay in diagnosis.[22] Moreover, since the parasite is largely sequestered in the spleen, liver and bone marrow, their demonstration entails embarking upon traumatic interventions, which further adds complexity in making the diagnosis.

Visceral leishmaniasis misdiagnosed as connective tissue disorders is well reported in literature.[23-25] Haematological abnormalities found in systemic lupus erythematosus namely anaemia, leucopenia or lymphocytopenia and thrombocytopenia due to the presence of auto antibodies can also be found in kala-azar.[26]

Visceral leishmaniasis is treated with Sodium Stibogluconate (SSG) IM/IV 20mg/kg/day for 30 days and Miltefosine 100 mg daily for four weeks in an area where sensitivity of SSG is more than 90%. In areas with SSG sensitivity less than 90% or SSG failures cases it is treated with Amphotericin B 1mg/kg body weight IV infusion daily or alternate day for 15-20 infusions. The dose can be increased in patients with incomplete response with 30 injections. In SSG and Miltefosine failures cases Liposomal Amphotericin B is used. [27]

The patient was living in a house made up of wood, stone and mud in a hilly area of Nepal. Further, they also had a cattle shed in their yard all with conditions favourable for sand fly breeding. Even though kala-azar is endemic in Nepal, this patient remained undiagnosed for a considerable period of time. A delayed diagnosis due to atypical manifestations may lead to a fatal outcome in patients. Instead of relying solely on the classical clinical

features of visceral leishmaniasis, simple laboratory findings like pancytopenia, altered albumin/globulin ratio and a positive rK 39 dipstick tests can help make an early diagnosis even in atypical cases, thereby reducing the mortality of visceral leishmaniasis.

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PATIENT CONSENT

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1. They have obtained written, informed consent for the publication of the details relating to the patient(s) in this report.
2. All possible steps have been taken to safeguard the identity of the patient(s).
3. This submission is compliant with the requirements of local research ethics committees.