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Original Research Article

Clinical and haematological parameters associated with patients of visceral leishmaniasis in a district of North Bihar

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ABSTRACT

Background: Visceral leishmaniasis is highly endemic in West Champaran district of Bihar. This endemicity is supposed to be due to poor hygiene and sanitation and poor control of vectors. This study was done to study clinical and haematological parameters of Kala-azar patients in this area.
Methods: A retrospective data collection was done in a medical college of north Bihar. Study duration was one year from January 2016 to December 2016. 43 cases, rk-39 positive from 13 blocks of W. Champaran admitted at medical college were studied for clinical and haematological parameters.
Results: Bhitha was the highest affected block (25.58%) followed by Manjhaulia (23.25%) Fever was the commonest presentation whereas splenomegaly was the most common sign. Pallor was seen in 90 % cases and hepatomegaly in 60 % cases. Patients presented with bleeding manifestation in 9.3% cases and lymphadenopathy in 6.9% cases. Among blood parameters anaemia was seen in 93% cases and thrombocytopenia in 83%. Microcytic hypochromic blood picture was the most common peripheral blood picture.
Conclusions: Extensive epidemiological investigation is needed to find out hidden cases in this area.

Keywords: Visceral leishmaniasis, Fever, Haematological

INTRODUCTION

Leishmaniasis is a disease caused by protozoan parasite of genus Leishmania and spread by the bite of certain type sand flies.[1] Three forms of Leishmaniasis are known- visceral leishmaniasis (VL), Cutaneous leishmaniasis (CL) and mucocutaneous leishmaniasis (MCL). VL is the severest form of Leishmaniasis and if not treated, it is often fatal.[2] Visceral leishmaniasis is caused by the infection of Leishmania donovani and it manifests as chronic and highly fatal parasitic disease of the viscera. It is estimated that the burden of this disease is in between 1,46700 and 2,82800 cases per year worldwide.[3]

Visceral Leishmaniasis which is commonly known as Kala-azar is a major public health problem in term of morbidity and mortality in countries like India, Bangladesh and Nepal affecting the poorest, rural population group. Altogether India, Nepal and Bangladesh harbour an estimated 67% of global visceral lishmaniasis with an estimated 200 million people at risk. Only India contributes more than 50% of visceral leishmaniasis in states of Bihar, West Bengal, UP and Jharkhand, only Bihar contributes 90% cases from India.[4]

Leishmania donovani is the only specie for visceral leishmaniasis in this region, the female sandfly Phlebotomous argentipis is the only vector and human are the only reservoir.[5,6] The countries under national vector

born disease control programme (NVBCP) mode; which includes a key developmental goal for reduction in visceral leishmaniasis.[7,8] Kala-azar control programme (NVBCP) has set itself the goal of decreasing the annual incidence of VL less than 1/10,000 population in atleast half the currently affected blocks by year 2017.

The objective of the study was to find out the clinical characteristics of the study population and to study the haematological parameters of the affected population.

METHODS

This was a retrospective study based on the hospital records. The data has been collected from January 2016-December 2017 from a tertiary care centre of West Champaran, Bihar.

Study area

The data has been collected from the West Champaran district of Bihar. All 43 cases of VL were taken from the blocks of W. Champaran after a positive result from rk-39 strip test. Detailed history and clinical examination was done in all patients, complete blood count, peripheral blood smear, liver function test and kidney function test were done. West Champaran district was established as a separate district in 1972 after split up of Champaran district in two parts. It was formerly a subdivision of Saran district then Champaran and Bettiah as its headquater. Total area of the district is 5228 square KM. West Champaran consists of 18 blocks. The Gandak and Sikrahna are the two important rivers of the district (Table 1).

Table 1: District profile (West Champaran).

Headquater	Bettiah
Total area	5228 square km.
Blocks	18
Panchayats	315
Villages	483
Rivers	Gandak, Sikrahna

Data collection

This was a retrospective data analysis from the case records of the patients at the tertiary care centre. Suspected clinical cases of Kala-azar were diagnosed by rk-39 strip test as confirmed cases at peripheral centres. These cases were transferred to Govt. Medical College, Bettiah for admission and further management. After clinical examination, patients were investigated for haematological profile especially complete blood count and peripheral blood smear. Patients were treated with supportive care and specific treatment for Kala-azar. Liposomal Amphotericin B was infused as specific therapy. All the patients recovered well and discharged with advice.

RESULTS

A total number of 43 cases were diagnosed as Kala-azar (VL). A two years old child was the youngest case diagnosed in this study. 92% of the cases belonged to lower socioeconomic group as per modified Kuppuswamy scale.

Bhitha was the highest endemic block (11 cases) identified in this study followed by Manjhaulia (10 cases). 8 cases also diagnosed in Yogapatti block, 4 cases each from Nautan and Madhubani blocks, 3 cases from Chanpatia , 2 from Bettiah and 1 case from Gaunaha (Table 2).

Table 2: Blockwise Kala-azar cases.

Blocks	Number of cases [N=43 (100%)]
Manjhaulia	10(23.25%)
Bettiah	02(4.6%)
Nautan	04(9.3%)
Bairia	00(0.0%)
Chanpatia	03(6.9%)
Lauria	00 (0.0%)
Yogapatti	08(18.6%)
Gaunaha	01(2.3%)
Narkatiaganj	00(0.0%)
Bagha	00(0.0%)
Khatraha	00(0.0%)
Bhitha	11(25.58%)
Madhubani	04(9.3%)

Table 3: Clinical findings of Kala-azar cases.

Clinical findings	Number [N=43 (100%)]
Fever	43 (100%)
Pallor	39 (90.7%)
Splenomegaly	43(100%)
Hepatomegaly	26 (60.46%)
Jaundice	09 (20.9%)
Generalised weakness	40 (93.02%)
Bleeding manifestation	04(9.3%)
Lymphadenopathy	03 (6.9%)
Weight loss	29(67.4%)

All 43 cases presented with fever as the commonest symptom whereas splenomegaly was the commonest clinical sign present in each and every case (100%). 39 cases (90.7%) presented with pallor during clinical examination and all 43 cases (100%) had enlarged and palpable spleen. 26 cases had hepatomegaly, only 9 cases (20.3%) presented with jaundice. 93% cases had generalised weakness whereas 4 cases (9.3%) presented with bleeding manifestation. Only 3 cases had lymphadenopathy and about 29(67.9%) cases complained of visible weight loss during illness. Reversal of Albumin: Globulin ratio was seen in 37 cases (86%).

Lymphocytosis was the most common (100%) haematological abnormalities in this study. Leukopenia was observed in 60.4% case. Liver Function Test (AST, ALT, Alkaline phosphatase) was abnormal in 7 cases (16.3%) with features of hepatitis. Pancytopenia was seen in 60.5 %, Bicytopenia in 39.5 % and thrombocytopenia was present in 83.7% cases. Thrombocytopenia was the cause of bleeding manifestation in this study. Peripheral blood smear showed microcytic hypochromic picture as a most common finding in 26 cases (60.46%) followed by normocytic normochromic blood picture in 20.9% and macrocytic blood picture in 11.6% cases (Table 4).

Table 4: Haematological findings of Kala-azar cases.

Blood picture	Number of cases [N=43 (100%)]
Anaemia	40 (93%)
Leukopenia	26 (60.46%)
Thrombocytopenia	36 (83.7%)
Pancytopenia	26 (60.46%)
Bicytopenia	17 (39.53%)
Lymphocytosis	43(100%)
RBC morphology	
Microcytic hypochromic	26(60.46%)
Macrocytic	05(11.6%)
Normocytic	09(20.9%)

DISCUSSION

This study is done to assess clinical and haematological changes associated with visceral leishmaniasis in remote district of Bihar. The major sign in our study were splenomegaly (100%) followed by generalized weakness (93%). Dhingra et al reported pyrexia in 70% of cases in his study and splenomegaly in 100% cases.[9] Agrawal et al showed pyrexia in 100% cases which is similar to our study.[10] Pallor was seen in 90% cases similar to other studies in which pallor was observed in 90-95% cases.[11,12]

Lymphadenopathy was reported as an unusual characteristic feature in hilly areas in approximately 50% of cases[11] whereas it was seen in 6.9% case during my study.

Lymphocytosis (100%) Anaemia (93%) and thrombocytopenia (83%) were the most common haematological disorders in this study. similar to other studies.[10,12] On peripheral blood smear, RBC showed microcytic hypochromic blood picture in majority of cases similar to studies conducted by Hamid et al.[13]

The predominance of microcytic, hypochromic blood picture could be due to undiagnosed long standing infection leading to anaemia of chronic diseases. However Agrawal et al observed normocytic – normochromic and microcytic blood picture in normal frequency [10]whereas dimorphic blood picture was the most common abnormality in the study conducted in West Bengal.[12] Pancytopenia was also a common haematological abnormality (60.5%) similar to other studies.[10,13] Splenic sequestration of the blood cell is the major cause of Pancytopenia in Kala-azar. Suppression of the bone marrow due to high burden of the infection is relatively rare.[14,15] The major limitation of the study was bone marrow examination, which couldn't be performed in all cases.

CONCLUSION

This study emphasises the need of extensive epidemiological work up in this region for identification of other pockets of this disease. Haematological and bone marrow examination can supplement epidemiological data by finding hidden cases. Information, education and communication (IEC) can be the best method to make people of this area aware about this disease and majors for prevention.

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