FREQUENCY OF VISCERAL LEISHMANIASIS IN ABBOTTABAD FROM 2005 TO 2009

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Background: Leishmaniasis is a parasitic disease caused by a haemoflagellate Leishmania, transmitted to humans through bites of female sand fly. The objective of this study was to assess the frequency of leishmaniasis in Abbottabad and nearby areas including villages of Nawanshehr, Dhodial, Gamavan, Sheikhulbandi, Kakul and Malikpura. **Method:** This was a retrospective study carried out in Pathology Department, Women Medical College and Benazir Bhutto Teaching Hospital Abbottabad from 2005 to 2009. The diagnosis was based on intracellular and extracellular amastigote forms of *Leishmania donovani* in the bone marrow aspirates. **Results:** We diagnosed 61 cases of visceral leishmaniasis, mostly from Nawanshehr (32.78%), in children below 5 years of age with febrile splenomegaly. **Conclusion**: The disease is gradually spreading southwards in the country. A high index of suspicion should be kept in mind for all cases coming from Northern Areas of the country where the frequency is quite high. Local health authorities should take drastic action against this spreading disease.

Keywords: visceral leishmaniasis, bone marrow, leishmaniasis

INTRODUCTION

Leishmaniasis is a parasitic disease caused by a haemoflagellate Leishmania and transmitted to humans through the bites of female sand flies belonging to 30 species.[1] Natural transmission is carried out by certain species of sand fly of the genus Phlebotomus (Old World) or Lutzomyia (New World). These are present in three different forms: Visceral leishmaniasis (VL), Cutaneous, and Mucocutaneous leishmaniasis. The visceral form, also known as black sickness or kala-azar in Asia, is characterised by fever, hepatosplenomegaly, anaemia, leucopenia and hypergamaglobulinemia. The serious complications of kala-azar are cancrum oris, dysentery, pneumonia, agranulocytosis, jaundice, haemorrhage and anasarca. It is the most severe form and, left untreated, is usually fatal.[2] The VL is typically caused by the *Leishmani donovani* complex, which includes three species: *L. donovani*, *L. infantum*, and *L. chagasi* each having a unique epidemiological pattern.[3] Leishmania infections are worldwide in distribution: they are found in five continents. The disease is endemic in the tropical and subtropical regions of 88 countries. There are an estimated 12 million cases worldwide; 1.5 to 2 million new cases each year. Cutaneous forms are 75% of all new cases, while 500,000 cases of VL occur every year.[4]

SUBJECTS AND METHODS

This was a retrospective study over a period of 5 yrs from 2005 to 2009. All cases were diagnosed and treated in Women and Children Hospital and DHQ Hospital Abbottabad. A detailed history of patients' illness and visits to endemic areas was taken. Clinical examination for pallor, lymphadenopathy, splenomegaly, hepatomegaly, etc., was done. Laboratory tests included haemoglobin estimation, TLC, DLC with Giemsa stain, ESR and platelet counts. Bone marrow aspiration was done for each patient. For patients below age two, upper end of tibia was used for aspiration while anterior superior iliac spine for the rest. Giemsa stain on marrow slides was used for morphology and Donovani bodies while Prussian blue for iron store estimation. Presence of intracellular and extracellular amastigote forms of *Leishmania donovani* in marrow smears confirmed the diagnosis.[5] On microscopic examination, they appeared as small ovoid organisms, single or in clusters with faint eosinophilic cytoplasm, dark coloured nucleus and kinetocore present within the cytoplasm of phagocytic cells.

RESULTS

A total of 61 cases were included in this study. There were 35 males and 26 females. Out of these 12 were above the age of 5 while 49 patients were 5 yrs or below. The records included history, clinical findings, haemogram, peripheral blood smear, bone marrow aspirates and treatment schedule. Proformas were filled with the help of these records. The figure below shows Leishmania Donovan bodies in bone marrow aspirate.

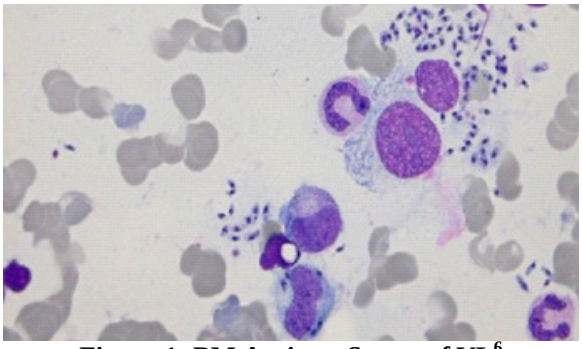

Figure-1: BM Aspirate Smear of VL[6]

The following tables include haematological findings, and signs and symptoms of Leishmaniasis.

Table-1: Haematological findings in 61 cases of visceral leishmaniasis

Parameter	Patients	Percentage
Haemoglobin g/dl		
8–12	10	16.39
4–8	22	36.06
<4	29	47.54
Total Leukocyte Count/mm^3		
4000 and above (normal)	31	50.81
4000–3000	9	14.75
3000–2000	6	9.83
<2000	15	24.54
Neutrophil Count		
Normal (40–75%)	33	54.09
Relative Neutropenia (<40% with normal TLC)	11	18.03
Absolute Neutropenia (<40% with decreased TLC	17	27.86
Lymphocyte Count		
Normal (20–45%)	9	14.75
Relative Lymphocytosis (>45% with normal TLC)	11	34.42
Absolute Lymphocytosis (>45% with decreased TLC)	17	49.18

Table-2: Symptoms and signs of VL

	Patients	Percentage
Symptoms		
Fever	**60**	**98.36**
Diarrhoea, vomiting	**22**	**36.06**
Pallor	**59**	**96.72**
Signs		
Hepatomegaly	**20**	**32.78**
Lymphadenopathy	**19**	**31.14**
Splenomegaly	**21**	**34.42**
Anemia	**59**	**96.72**

Table-3: ESR in 61 cases of VL

	Patients	Percentage
>100	3	4.91
100–50	13	21.31
50–20	24	39.34
<20	21	34.34

DISCUSSION

Leishmaniasis is mostly a disease of the developing world. The geographical distribution of leishmaniasis is limited to the areas of natural distribution of the sand fly, the vector for the disease. The annual incidence and prevalence of Kala-Azar cases worldwide is 0.5 million and 2.5 million respectively.[7] The disease is found across much of Asia and Middle East. Out of this, 90% of confirmed cases occur in India, Nepal, Bangladesh, Sudan and Brazil.[8] About two million new cases of visceral leishmaniasis are considered to occur every year in endemic zones of Latin America, Africa, Indian subcontinent, Middle East and Mediterranean region.[9] Within Afghanistan, Kabul is estimated as the largest centre of cutaneous leishmaniasis in the world, with 67,500 cases approximately.[10] Human immunodeficiency virus HIV-VL co-infection is mostly reported in countries of Mediterranean region, especially Spain, Italy and France.[11] VL elimination strategies have been launched in these countries and in Latin America.[12]

In Pakistan, visceral leishmaniasis was first reported over 40 years ago from the remote north-eastern Himalayan region.[13] In Baluchistan studies covering this area have been done since early 1980s.[14] Sporadic cases are now widely reported from the Northern Areas, parts of NWFP and Punjab, together with Azad Jammu & Kashmir. The incidence of this disease is more common in Northern Pakistan, Dera Ismail Khan, Tank, Quetta, AJK and Hazara Division. A study on VL was done in District Abbottabad in Ayub Medical College during the period of 1992–1996 and included areas of Dhamtor, Azizabad, Bagh Bandi, Nathiagali and Berangali. Thirty-five cases of VL were diagnosed on bone marrow aspirates.[15] Haematological findings of VL in relation to clinical findings were studied in 2008 in Hazara Division.[16]

In our study, we included the areas of Abbottabad and nearby villages *viz* Nawanshehr, Dhodial, Gamavan, Sheikhulbandi, Kakul and Malikpura. According to our data, the frequency of visceral leishmaniasis in these regions is quite high, with Nawanshehr having the highest percentage (32.78%). Most of the cases were children below 5 yrs with febrile splenomegaly. Male to female ratio showed the incidence of the disease to be higher in boys. Some cases remain undiagnosed due to avoidance of invasive investigations as bone marrow aspirations while others were referred to bigger hospitals in Rawalpindi and Islamabad. Poverty and VL treatment costs cause potential limitations in full and efficacious treatment leading to further dissemination of the disease.

CONCLUSION AND RECOMMENDATIONS

The large number of endemic countries shows the global scale of the problem, although it is difficult to provide realistic estimates due to subclinical forms, undiagnosed or unreported cases. Our study shows that the frequency of visceral leishmaniasis has increased over a period of time since the last study was carried out in Abbottabad. Research priorities, current strategies and surveillance of local health authorities regarding visceral leishmaniasis control should be reviewed otherwise its continuous spread could prove to be more disastrous.

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