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A CLINICO-HAEMATOLOGICAL STUDY OF VISCERAL LEISHMANIASIS FROM NORTHERN PAKISTAN

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ABSTRACT:

Back Ground: Visceral Leishmaniasis is a disease of major public health importance leading to severe morbidity and mortality if remains untreated. Although prevalent in Northern Pakistan, physicians may come across this serious illness because of frequent traveling of the modern age.

Objective: To observe clinical and haematological features of visceral leishmaniasis in patients from Northern Pakistan referred to and diagnosed at Armed Forces Institute of Pathology, Rawalpindi.

Patients & Method: Demographic, clinical and haematological features of all patients diagnosed on bone marrow examination as having visceral leishmaniasis over a period of 05 years from March 2003 to February 2008 were recorded. The data was managed and analyzed using computer programme SPSS-10.

Results Out of 70 patients, 49 (70.0%) were males and 21 (30%) were females. Age of the patients ranged from 1.6 to 25 years with a mean of 03.51±3.56 years. Sixty eight (97.14%) of these were children with a mean age of 02.97±1.52 years. Fever and splenomegaly was present in all the patients and pallor, hepatomegaly and abdominal distention in majority. Haemoglobin ranged from 03 to 12 grams per liter with a mean of 6.42±2.19. Mean RBC count was 3.41±0.87 X 109 per liter, mean WBC count 5.15±2.64 X 109 per liter, mean platelet count 49.5±45.8 X 109 per liter and mean Reticulocyte count was 5.54±3.71 X 109 per liter.

Conclusion: Visceral leishmaniasis is prevalent in northern areas of Pakistan, where majority of the patients are children. Splenomegaly, persistent irregular fever and pancytopenia are the consistent clinico-haematological features in these patients.

Key Words: Leishmaniasis, Visceral leishmaniasis, Pakistan, Pancytopenia.

INTRODUCTION:

Leishmaniasis is an important, widespread protozoan disease, which continues to plague rural population in many countries of Africa, Asia, Latin America and Mediterranean regions. [1] It is usually a zoonotic disease with transmission of the leishmania parasite by bite of sandflies to wild or domestic animals, especially rodents and canines [2] with humans as incidental hosts. Visceral leishmaniasis occurs globally and is disproportionately common in Horn of Africa, South Asia and Brazil. [3, 4] Although cutaneous leishmaniasis is more common in Pakistan, visceral leishmaniasis is endemic in Azad Jammu & Kashmir, North Western Frontier Province [5,] and areas of Punjab adjoining Azad Jammu & Kashmir and North Western Frontier Province. [6] Cases have also been reported from Sindh Province[7.] Visceral leishmaniasis is an infectious disease characterized by irregular fever, hepatosplenomegaly, generalized weakness and emaciation with anemia, leucopenia and thrombocytopenia. It is predominantly a disease of childhood, insidious in origin, slow in development and fearful in effects. Bone marrow examination is a reliable method for diagnosis of visceral leishmaniasis with a sensitivity of 60-85%. [8]

Visceral Leishmaniasis is a disease of major public health importance leading to severe

morbidity and mortality up to 90%, if remains untreated. Being such a dreadful but treatable disease, physicians need to remain aware of the clinico-haematological features of the disease for early diagnosis and prompt treatment. This becomes even more important keeping in mind the frequent and fast traveling in this modern age. [9] The aim of this study was to observe clinical and haematological features of visceral leishmaniasis in patients from Northern Pakistan referred to and diagnosed over a period of 05 years from March 2003 to February 2008 at Armed Forces Institute of Pathology, Rawalpindi.

PATIENTS AND METHODS:

This descriptive study was conducted at Armed Forces Institute of Pathology, Rawalpindi, a tertiary care laboratory, to observe clinical and haematological findings of patients from Northern areas of Pakistan diagnosed as cases of Visceral Leishmaniasis on bone marrow examination over a period of 05 years from March 2003 to February 2008.

Demographic profile including age, gender and area of residence and the presenting clinical features of all the diagnosed patients were recorded. All such patients were diagnosed on bone marrow examination aspirated either from posterior superior iliac spine or upper end of tibia according to age of the patient. Smears of the aspirates were made immediately and examined under microscope for demonstration of LD bodies after staining with Leishman's stain. Findings of blood samples taken at the time of bone marrow examination from all the patients were also noted. These included blood haemoglobin, total red blood cell (RBC) count, total leukocyte count (TLC), differential leukocyte count (DLC), platelet count and reticulocyte count. ESR was also measured on the same blood sample by Westergren's method. Computer programme SPSS-10 was used to manage and analyze the data. Descriptive statistics like frequencies, percentages and means with standard deviation were calculated.

RESULTS:

A total of 70 cases were studied. Age of the patients ranged from 1.6 to 25 years with a mean of 03.51±3.56 years. Sixty eight (97.14%) of these were children within the age range of 1.6 to 08 years with a mean of 02.97±1.52. Out of these 70 patients, 49 (70.0%) were males and 21 (30%) were females. Male to female ratio was 7: 3. A total of 37 (52.8%) cases were resident of Azad Jammu & Kashmir chiefly from Rawlakot, Muzaffarabad, Bagh, Kotli and Plandri, 16 (22.9%) cases reported from Chilas (Gilgit), 11 (15.7%) from Murree and 6 (08.6%) from District Abbottabad. Clinical findings and their frequency is recorded in Table 1.

Haemoglobin ranged from 03 to 12 grams per liter with a mean of 6.42±2.19. In 66 (94.3%) patients it was below 09 g/dl. RBC count ranged from 1.50 to 5.20 X 109 per liter (mean=3.41±0.87), WBC count ranged from 1.50 to 11.50 X 109 (mean 5.15±2.64) and platelet count ranged from 04-117 X 109 (mean 49.5±45.8). Reticulocytes ranged from 02-20% (mean 5.54±3.71), polymorphs were 05-50% (mean 24.6±11.9) and lymphocytes were 44-90% (mean 69.3±11.6%). ESR ranged from 22 to 90 (mean 57.8+15.5) millimeters fall at the end of one hour as measured byWestergren'smethod.

DISCUSSION:

Visceral leishmaniasis is endemic in 62 countries with World Health Organization estimates of 500,000 cases of visceral leishmaniasis occurring each year. [10] The disease mainly affects children [11, 12], though adults may also be infected. [6, 13] In our study more than 97% were children upto 08 years of age and there were only two adult females diagnosed as visceral leishmaniasis.

Visceral leishmaniasis is a chronic inflammatory disease characterized by fever, hepato-splenomegaly, pancytopenia and wasting. However, at times, patients with visceral leishmaniasis may not have the typical clinical features. [14] All the patients in this series had history of fever and splenomegaly. Hepatomegaly and pallor were present in majority and abdominal distension, lymphadenopathy and bleeding were less common.Splenomegaly was present in all the patients at the time of diagnosis. In 19 patients it was massively enlarged and extended upto iliac fossa. As the disease involves reticulo-endothelial system of the body, spleen is an initial site for the generation of cell-mediated immune responses. However, ultimately it becomes a site of parasitepersistencewith associatedimmunopathological changes. The progressive development of splenic pathology is largely associated

TABLE 1:

CLINICAL FINDINGS OF PATIENTS WITH VISCERAL LEISHMANIASIS (N=55)

S/No	Clinical Finding	Number of patients	Percentage
1.	Fever	70	100.0%
2.	Splenomegaly	70	100.0%
3.	Hepatomegaly	66	94.3%
4.	Pallor	64	91.4%
5.	Abdominal Distension	45	64.3%
6.	Lymphadenopathy	28	40.0%
7.	Bleeding	11	15.7%

with high levels of TNF and interleukin (IL)-10. [15] All the patients in our study had fever; the pattern of fever was persistent but irregular. The presence of a fever is usually related to stimulation of the body's immune response. Fever can support the immune system's attempt to gain advantage over infectious agents and it makes the body less favorable as a host for replicating organisms which are temperature sensitive. However, prolonged severe fever may result in cellular stress, infarctions, necrosis, seizures and delirium.Lymph node enlargement was present in 40 % patients, 72% of whom had lymphadenopathy localized only to cervical region. Other studies have also shown minimal involvement of lymph nodes. [5, 12], [16, 17] Although bleeding diathesis, gastrointestinal complaints and cough [18] are occasionally reported, jaundice with grossly deranged liver function tests [17] and acute renal failure [18] are considered bad prognostic signs.

Malaria, typhoid fever, tuberculosis, lymphoma and leukaemia should be considered in all patients presenting with fever, hepatosplenomegaly and haematological disorders.Pancytopenia is the most consistent haematological finding in patients with visceral leishmaniasis. [19] Pancytopenia is defined as haemoglobin <10g/dl, absolute neutrophil count $<1.5x10^9$/L and platelet count <100x109/L. [19] There is usually neutropenia with lymphocytosis. [12] ESR was raised in 100% of cases. [12, 20] and in more than 70% cases it was more than 50mm fall at the end of first hour. Rise in ESR is due to chronic nature of illness associated with hypergammaglobulinemia [20] hypoalbuminemia and altered albumin/globulin ratio. [21] Formol gel Test used to be performed previously had the same basis. [5, 16] In leishmaniasis, reticulocyte count is either normal or raised. [5] Blood counts in this study are comparable to the studies carried out by Altaf et al and Tanoli et al. [5, 12, 16] Hematologic parameters are characteristic for visceral leishmaniasis on the basis of which diagnosis can be readily established being confirmed by other tests. [22] Several advanced, sophisticated and costly serodiagnostic tests are available to diagnose visceral leishmaniasis [23] which are beyond the reach of a standard/field clinical diagnostic laboratory especially in underdeveloped countries like ours where diagnosis is established by demonstrating the parasite (LD bodies) in stained smears of bone marrow .[24-26]

Visceral leishmaniasis is prevalent in northern areas of Pakistan and represents a severe public health problem. Any patient from these areas with fever, anemia with hepatosplenomegaly and pancytopenia associated with normal or high reticulocyte count must be subjected to bone marrow examination to rule out possibility of leishmania infection. The disease has been eradicated successfully from some areas of the world. [27] Strong commitment is required to formulate a control strategy to eradicate the deadly disease by a combination of approaches like early recognition, treatment, control of vectors and health education of the population.[28]

CONCLUSION:

Visceral leishmaniasis is prevalent in northern areas of Pakistan where majority of the patients are children. Splenomegaly, persistent irregular fever and pancytopenia are the consistent clinico-haematological features of these patients.

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