

Clinical Spectrum, Nutritional Status and Outcome of Visceral Leishmaniasis in Children – Tertiary Care Hospital Experience

Nutritional Status and Outcome of Visceral Leishmaniasis in Children

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ABSTRACT

Objective: The objective of this study was to enlighten the clinical spectrum of Visceral Leishmaniasis (VL) in children presenting to tertiary care hospital along with nutritional status and outcome in hospital.

Study Design: Retrospective Study

Place and Duration of Study: This study was conducted at the Ayub Teaching Hospital, Abbottabad from January 2018 to December, 2019.

Materials and Methods: Patient diagnosed case with VL were and clinical features, nutritional status and outcome was documented on specific proforma. Clinical spectrum was taken as presenting features of patients with pallor, bruises, and edema. Patient's nutritional status was assessed by doing serum albumin and plotting weight for age on growth chart for sex. Outcome taken as discharge, expiry or transfer out. Data was analyzed by SPSS 20 and results taken significant with p value < 0.05.

Results: There were 36 patients, 25 (69.4%) male and 11 (30.6%) females. Patient's age ranged from 05 months to 6 years, mean age of 27.86 ± 20.49 . Pallor was main presenting feature. Mean serum albumin of patients were 2.51 ± 0.44 and mean Hb was 6.79 ± 1.83 . Out of 36 patients, 34 patients (94.4%) were having Hb less than 9 gm/dl. Majority of patients (66.7 %) were below 5th percentile for weight for age on growth chart. Most of underweight patients were female and there was significant relationship between gender and underweight (p value 0.041). There was one expiry and 35 (97.2%) patients improved and discharged from hospital.

Conclusion: Pallor and under nutrition are main presenting feature while females are more malnourished. Appropriate treatment leads to complete recovery.

Key Words: Clinical spectrum, nutritional status, outcome, visceral Leishmaniasis

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INTRODUCTION

Visceral Leishmaniasis (VL) has been enlisted as one the neglected parasitic infectious disease by World Health Organization (WHO).^{1,2} Though Visceral leishmaniasis (VL) is endemic in many parts of world including Pakistan yet it can lead to severe manifestations and even death if not treated in time and

with proper dose and duration. VL infections present as sub clinical in many cases.³ VL is endemic in most of the countries of world as it is estimates that almost 100 countries are endemic.

New cases of VL are estimated to 0.7 to 1 million yearly.⁴ As in few countries, VL is highly endemic, it affect the country economy badly as health system is under constant constrain due to high mortality and morbidity.⁵ Sand fly is responsible for the transmission of VL as the parasite affects the macrophages and replicates in bone marrow, spleen and liver.⁶ Though the majority of patients with VL present with fever, loss of appetite leading to weight loss especially in children and splenomegaly yet VL can also have atypical presentation as gastrointestinal symptoms including portal hypertension, pneumonia and even absence of splenomegaly.⁷ The objective of this study was to enlighten the clinical spectrum of VL in children presenting to tertiary care hospital along with nutritional status and outcome in hospital.

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MATERIALS AND METHODS

This study was done in Paediatric B ward of Ayub Teaching Hospital, Abbottabad. This was retrospective study. Data had been retrieved from files of patients from January 2018 to December, 2019 who were admitted to Paediatric B ward with diagnosis of VL after approval from institutional review board. Recorded from data, the presenting features of patient including fever, edema, rashes (petechial/bruise), history of contact with Leishmaniasis patient, complete blood count findings, Leishmaniasis antibody or bone marrow for diagnosis, serum albumin and outcome from hospital in form of discharge, expiry or transfer out was documented on specific proforma. Patient age, sex, weight was recorded on proforma. Data was analyzed by SPSS and results taken significant with p value < 0.05 . Clinical spectrum was taken as presenting features of patients with pallor, bruises, and edema. Patient's nutritional status was assessed by doing serum albumin and plotting weight for age on growth chart for sex. Patients with serum albumin less than 3.0 gm/dl were taken as less nourished and patients having less than 5th percentile on weight for age growth chart taken as malnourished. Patients with platelet count less than 20 k /cmm and bruises and petechial rash were given platelets transfusion. History of Leishmaniasis in family, neighborhood and village was also recorded along with pet dog at home.

RESULTS

In this there were total of 36 patients. Out of 36 patients, 25 (69.4%) were male and 11 (30.6%) were females. Age of patients ranged from 05 months to 6 years with mean age of 27.86 ± 20.49 . Of total 36.1% patients were below one year, 25% patients were between one to two years and 38.9% patients were above 2 years. Weight of patients ranged from 3.80 to 14 kg with mean weight of 9.33 ± 2.42 kg. Patient acute state of nutritional was check by doing serum albumin. There were 35 (97.2%) patients with serum albumin less than 3.0 gm/dl. Mean serum albumin of patients were 2.51 ± 0.44 . (Table 1). Hb ranged from 3.6 to 12.5 gm/dl with Hb of 6.79 ± 1.83 . Out of 36 patients, 34 patients (94.4%) were having Hb less than 9 gm/dl. Majority of patients (66.7 %) were below 5th percentile for weight for age on growth chart. Leishmania antibody was done is 35 (97.2%) patient and it was positive. Only in on patient Leishmania antibody was not done as bone marrow was done in the patient for diagnosis. Overall bone marrow was done in 3 (8.3%) patients. There was history of Leishmaniasis in neighborhood in 5 (13.9%) patients. Family history of Leishmaniasis was present in 3 (8.3%) patients. Patients with Leishmaniasis were present in village and surrounding area in 16.7% cases. Dog as pet were kept at home in 30.6% patients with Leishmaniasis.

Majority (94.4%) patient's presented with history of pallor and 30.6% patients presented with edema. At presentation 15.7% patients were having bruises on the body. At presentation 27.8% patients were having platelets less than 20K / cmm and needed platelet transfusion. Majority of underweight patients were female and there was significant relationship between gender and underweight with p value of 0.041. (Table 2). There was one expiry during hospital stay and 35 (97.2%) patients improved and discharged from hospital.

Table No.1: Age, Weight, Albumin, CBC

	Min.	Max.	Mean	Std. Deviation
Age (months)	5.0	72.0	27.861	20.4927
Weight (kg)	3.80	14.00	9.3278	2.42483
Albumin (gm/dl)	1.5	4.0	2.514	0.4441
ALT (IU/L)	10	64	33.39	12.311
TLC (thousand/ul)	1.60	13.10	4.8808	2.52112
Platelets (thousand/ul)	1.6	169.0	60.625	45.8019
Hb (gm/dl)	3.6	12.5	6.789	1.8261

Table No.2: Gender versus percentile cross table

Gender	Percentile		Total	
	Above 5th percentile	Below 5th percentile		
Sex	Male	11	14	25
	Female	1	10	11
Total		12	24	36

DISCUSSION

VL is a major public health problem leading to severe morbidity and mortality if untreated, mainly affecting children. It is caused by parasite which is intracellular obligate and transmitted by female sand fly. Literature has shown that even VL cases are resistant to pentavalent antimony compounds requiring amphotericin B and interferon gamma for treatment.⁸ Incidence of Leishmaniasis has increased in last few decades due to multiple factors including human travelling, expansion of population and increase susceptibility to infections due to malnutrition and human immunodeficiency virus (HIV). It is evident in the literature that children presenting with pyrexia of unknown origin showed the VL in bone marrow of 13.3% patients.⁹ This study was done to enlighten the clinical spectrum of VL in children presenting to tertiary care hospital along with nutritional status and outcome in hospital.

Presentation and clinical spectrum of VL ranges from self-healing skin ulcer to lethal systemic presentation. Clinical features include history of prolong fever, loss of appetite and weight loss, enlargement of liver and

spleen and complete blood count showing pancytopenia.¹⁰ Adam GK et al¹¹ did their study in Eastern Sudan and investigated the mortality rate and incidence of VL. It was retrospective study and data was collected from ministry of health. The data was of 14 year from 2002 to 2015. This study included 51773 patients. In 2002 the fatality rate was 4.8% and it declined to 1.1% in 2014. Case fatality rate was more in patients who live in rural area. There was significant relationship between death and rural area residence with p value of 0.021. In our study almost all of the patients were from rural area. The mortality was 2.8% as only one patient died. But majority of patients were malnourished as 66.7 % were below 5th percentile for weight for age on growth chart. In one of study by Al-Warid HS et al¹² in Iraq objective was identification of VL association with age and sex. In their study males were at higher risk as compare to females and VL more in children less than 5 years of age. In our study apart from few patients, rests of the patients were less than five years of age and majority of them were males. It is comparable to the findings of Al-Warid et al study results. Ahuja A et al¹³ in their research article highlighted the spectrum of VL including unusual presentation as patients presented with infectious etiology to malignancy. There were six patients and presentation was with or without fever as four patients had splenomegaly, one patient each with unilateral pleural effusion and renal failure. In our study none of the patient presented with unusual presentation.

Bezerra GSN et al¹⁴ in their review article discussed about the diagnosis of VL by using urine sample. Due to non-specificity of clinical symptoms of VL, diagnostic test with high sensitivity and specificity are required. There is relationship between Leishmania DNA and renal impairment even the DNA is there in urine without renal involvement. In our study the main diagnostic test was by Leishmania antibody and only two patient's diagnosis was made on bone marrow aspirate. Al-Eryani A et al¹⁵ did one study in Yemen about the patient description and characteristics of children presenting with VL. Most of children were having weight loss (93%), pallor (86%) and malaise (86%). In our study 66.7% children were underweight, 94.4% children at presentation were pale, 97.2% children were having serum albumin less than 3.0 gm/dl and 30.6% children had edema at presentation.

Skenderi E et al¹⁶ presented one case report and diagnosis was VL as it one important cause of fever of unknown origin. In 20 months old child, presenting feature was with fever. In our study all patients were having history of fever. Goto Y et al¹⁷ in their review article performed systematic review regarding anemia in patients with VL. They review estimated that prevalence of anemia was in more than 90% and degree of anemia was moderate to severe with mean Hb of 7.5 gm. In our study pallor was present in 86% patient

while Hb less than 9gm was present in 94.4% patients. Cloots K et al¹⁸ in their research article concluded that males are at risk for developing VL. The disease pathogenesis is related to biological sex related differences. In our study majority of patients were male (69.4%) while females were 30.6%. Kimutain R et al¹⁹ studied the efficacy of sodium Stibogluconate and Paromomycin in combination in Eastern Africa and found it to be safe except in older and HIV positive patients. In our study all patients were given sodium Stibogluconate and they responded well as 97.2% patients improved and discharged from hospital. Altaf C et al²⁰ did study in Muzaffarabad. In their study the median age of patients were 18 months where as in our study the median age was 24 months. In their study the mortality was 3.28% while in our study it was 3.8%. All of patients responded well to the antimony based drug as that of our study. There is predominantly helper T cell (Th) 2 response in VL and there are high levels of interleukin-10 (IL-10). Patients who are cured of VL, immune response is by Th1 predominantly and high level of interferon-gamma (IFN- γ). Post Kala-azar Dermal Leishmaniasis (PKDL) in the presentation in which the immune response characteristics are of Th2 and Th1, leading to dissociation between immune response in the skin and manifestation in form papulonodulare or macula. The interval between VL and PKDL is from 0 to 3 years in different regions of world.²¹ In our study none of the patient had PKDL till completion of treatment but there should be study involving patients for development of PKDL.

There were limitations in this study. Due to retrospective study, follow up could not be done and complete recovery status could not be ascertained. Also improvement in malnourishment status could not be documented on follow up.

CONCLUSION

Pallor and under nutrition are main presenting feature of children presenting with VL. Females are more at risk for having underweight as compare to male children. Timely diagnosis and treatment leads to complete recovery.

Author's Contribution:

Concept & Design of Study: Syed Sajid Hussain Shah
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Revisiting Critically: Syed Sajid Hussain Shah, Shahzad Najeeb

Final Approval of version: Syed Sajid Hussain Shah

Conflict of Interest: The study has no conflict of interest to declare by any author.

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