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Visceral leishmaniasis among children presenting with pancytopenia

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ABSTRACT

Background: Pancytopenia may either arise from a production defect of hematopoietic progenitors or from the cellular function's peripheral destruction because of infection, hypersplenism or immune-mediated damage. Visceral leishmaniasis (VL), is among the chronic parasitic infections globally, which affects millions of people recently, has been found to be increasing in frequency among Pancytopenia patients.

Objective: To determine the frequency of visceral leishmaniasis among children presenting with pancytopenia at Pediatric Department, Azad Jammu and Kashmir Medical College Muzaffarabad.

Methodology This cross sectional study was conducted at the Department of paeds SKBZ/ CMH, Muzaffarabad. The study duration was 6 months from June 2018 to December 2018. All children with pancytopenia of either gender were enrolled. After getting demographic information, all the cases underwent bone marrow sampling to assess the Visceral Leishmaniasis. All the data was collected by self-made proforma.

Results: Total 75 patients were studied; their mean age of patients was 6.74±3.14 years. Males were in majority 67.69% and 32.31% were females. Leishmaniasis was found 15.38% of the cases. Leishmaniasis was statistically insignificant according to age and gender; p-values were quite insignificant.

Conclusion: It is concluded that the visceral leishmaniasis in children with pancytopenia was 15.38%.

Keywords: Visceral leishmaniasis, pancytopenia.

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Introduction

In pancytopenia (a disorder) all of the three peripheral blood lineage is diminished, it is a widespread hematological issue that is faced in clinical settings and should be reported on clinical basis if a patient has unexplained pallor.[1] Pancytopenia remains a significant clinico-hematological phenomenon faced in regular clinical settings. in this condition all the three key blood elements (erythrocytes, leukocytes, and thrombocytes) are reduced in quantity.[2] Bone marrow contributes significantly in etiology explaining of pancytopenia. Timely identification of the intrinsic pathology would not only influence the morbidity as well as mortality of susceptible pediatric sufferers but would also enable to manage the simplest and most easily curable condition.[2] In pancytopenia, the bone marrow is usually hypocellular because of primary synthesis defects, possibly because of reduced development of hematopoietic cells, inadequate haemtopoiesis, or could be because of peripheral cell destruction.[1] Causes of pancytopenia vary widely ranging from minor nutritional deficiencies like megaloblastic anaemia to complete bone marrow failure as in cases of aplastic anemia and myelofibrosis. Regardless of underlying pathology, it is a strong indication of trephine biopsy and marrow aspiration.[3] Visceral leishmaniasis (VL) is a potentially fetal parasitic infection caused by phlebotomine sandflies.[4] VL is an acute form of leishmaniasis (a disease caused by protozoan parasites Leishmania infantum & Leishmania

donovani and is transmitted if host is bitten by certain sand fly species). In VL, the parasite migrates to the bone marrow and vital organs, destroying erythrocytes and leukocytes.[5,6] VL has been referred to as a parasitic form of HIV / AIDs, because it affects the immunity. VL typically presents with prolonged fever, progressive pallor, weight loss and hepatosplenomegaly. However the condition is treatable, it is challenging to administer existing treatments, very costly, or unsafe for extensive application in underdeveloped countries.[5,7,8] A local study was done on 67 cases of pancytopenia, they found they reported that leishmaniasis was seen in 20% cases, this study was not done specifically on pediatric populations.[3] Limited data is available on frequency of visceral leishmaniasis in children with pancytopenia. Though this study was done in order to establish the frequency of Visceral Leishmaniasis so that proper treatment can be employed to have better treatment prognosis. This study will help to find out the new prevalence of visceral leishmaniasis in children diagnosed with pancytopenia, as this disease is much more common in Muzaffrarabad region as compared to previous studies in other regions.

Methodology

This cross-section study was conducted at Department of paeds SKBZ/ CMH, Muzaffarabad during six months from June 2018 to December 2018. All the patients with age 6 months to 12 years with Pancytopenia of either gender were included. Pancytopenia was defined as; anemia (Hb < 10g/dL), leukopenia (TLC <4000/ul) and thrombocytopenia (Platelets <150000/ul). Patients who underwent fresh blood transfusion, osteopetrosis, congenital aplastic anemia and thalassemia were excluded. After taking informed consent including demographic information the sample of bone marrow was sent to hospital laboratory for analysis of Visceral Leishmaniasis that was diagnosed as bone marrow aspirates shows amastigotes of leishmania donovani. All the data was entered in self-made proforma. Data analysis was done by using SPSS version 20.

Results

The mean age of patients was 6.74±3.14 years with range of minimum 1 year and maximum 12 years. There were 44(67.69%) male and 21(32.31%) females. (Table I)

In this study leishmaniasis was found in 10(15.38%) of the cases. Figure 1

Leishmaniasis was diagnosed in 5(22.7%) cases aged < 6 years and in 5(11.6%) cases aged 6-12 years. The Leishmaniasis was statistically insignificant with respect to age groups, p-value > 0.05. Leishmaniasis was diagnosed in 5(11.4%) males and 5(23.8%) female cases, which was statistically insignificant according to gender p-value > 0.05. (Table II)

Table 1: Mean age and gender of the patients(n=75)

Variables		Statistics
Age	(Mean+S.D)	3.41±6.74 years
	Range (minimum- Maximum)	1-12 years
Gender	Males (frequency (%))	44(67.69%)
	Females (frequency (%))	21(32.31%)

Table II: Leishmaniasis with respect to age and gender (n=75)

Variables		Leishmaniasis		Total	p-value
		Yes	No		
Age groups	***< 6 years***	5(22.7%)	17(77.3%)	22(100%)	0.241
	6-12 years	5(11.6%)	38(88.4%)	43(100%)	
Total		10(15.4%)	55(84.6%)	65(100%)	
Gender	***Male***	5(11.4%)	39(88.6%)	44(100%)	1.692
	Female	5(23.8%)	16(76.2%)	21(100%)	
Total		10(15.4%)	55(84.6%)	65(100%)	

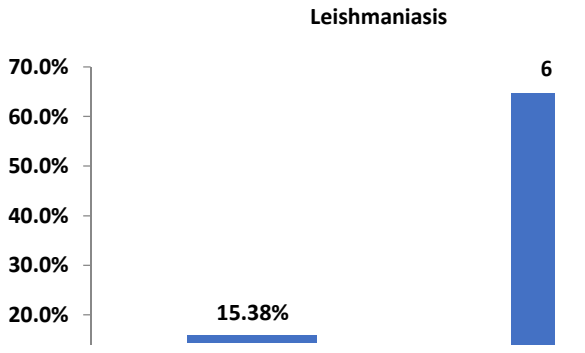

Figure 1. Leishmaniasis among children n=75

Discussion

Visceral leishmaniasis (VL), is among the world's most dangerous parasitic infections, which accounts for > 50 thousand human deaths annually and affects millions across South Asia, East Africa, South America and the Mediterranean area.[9] Recently, this form of leishmaniasis was seen increasingly in AIDs patients or are intravenous users of drugs or both, indicating a possible mechanism

of dissemination by infected syringes.[10] Infected cases may present with symptoms of splenomegaly, loss of weight, weakness, irregular fever and anemia or pancytopenia occurring progressively during weeks or even months.[11]

In current study leishmaniasis was found in 10(15.38%) of the cases having pancytopenia. A local study was done on 67 cases of pancytopenia; they reported that leishmaniasis was seen in 20% cases, this study was not done specifically on paediatric populations. This frequency was higher as found in current study. Another study reported that Visceral Leishmaniasis was seen in 3.75% in children of Pancytopenia.[8] This frequency was lower as found in present study. Khan TA et al[8] reported that pancytopenia was commonly caused by aplastic anemia (37.5%) after that Acute Leukemia (13.75%), Megaloblastic anemia (13.75 %), and hypersplenism (10%). Visceral leishmaniasis was present in 3.75% cases. Another study was conducted on 67 cases of pancytopenia where children were 15% and adults were 52%, among children with hypersplenism and leishmaniasis, 20% had pancytopenia after that 3.8% had acute leukemia, 6.7% had aplastic anemia and 6.7% were the case of megaloblasticanaemia. Jan et al.[12] assessed the several spectrum of pancytopenia along with its incidence based on bone marrow investigation among children aged between 6 months and 14 years and leishmaniasis found 2.93%. A study was conducted in India to assess the clinico-hematological and etiological profile among children with pancytopenia and bicytopenia and visceral leishmaniasis was present in 2.0% of bicytopenia and 2.9% of pancytopenic patients.[13]

In this study mean age of patients was 6.74±3.14 years, which was higher as compared to Iranian study of Abdinia B et al[6] as 17.94 months, and males were in majority which was similar to this study. Similarly in another study of Karagün BŞ et al[14] reported that males were (50%) females were(50%) and mean age was 88±40 months. Many studies reported that the Visceral leishmaniasis is incurable, if left untreated and may characterized by fever, hepato-splenomegaly, weight loss, progression, and pancytopenia.[15-17] Around 50% of patients in Sudan and 5–10% in the Indian subcontinent develop dermal leishmaniasis after recovery of Visceral leishmaniasis.[15] In the study of Koster KL et al[18] observed similar findings and stated that for pancytopenia, a detailed investigation of bone marrow that goes beyond the typical focus on disease also includes the search of parasites including Leishmania.

Conclusion

It was concluded that among children having pancytopenia the visceral leishmaniasis found to be 15.38%. Hence during treatment of pancytopenia Leishmaniasis must be ruled out and if found then must be treated accordingly. Few studies have been found on particular association of pancytopenia and Visceral leishmaniasis hence further studies are suggested.

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