

Comparative Study of Hematological Parameters of Untreated Leprosy Cases and Control

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ABSTRACT

Objective: To evaluate the Hemoglobin, Total Leukocyte Count, Differential Leukocyte Count, Platelets, RBC Count in leprosy patients.

Study Design: A case control study

Place and Duration of Study: This study was conducted at the Department of Biochemistry, University of Karachi from March 2015 to April 2017.

Materials and Methods: A total of 110 newly diagnosed untreated leprosy patients 79 male, 31 female were taken from Marie Adelaide Leprosy Centre, Karachi. Clinical and bacterial based skin smear test for diagnostic purpose performed, 76 control samples 55 male, 21 female were taken from general population for comparison.

Results: Table 1 demonstrate that all fractions of complete blood count (CBC) were non- significant ($p > 0.05$) except hemoglobin and RBC, which were decreased significantly high ($p < 0.001$) and ($p < 0.004$) in untreated leprosy cases when compared with control group.

Conclusion: In this study hemoglobin and RBC's count were found decreased in untreated leprosy cases may be due to poor diet and inadequate nutrient intake.

Key Words: Leprosy, Total Leukocyte Count, Differential Leukocyte Count, Red Blood Cells.

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INTRODUCTION

Leprosy is infectious disease transmitted by droplet infection and caused by *Mycobacterium leprae*¹, it involves nerves and skin.² It is successfully treated with current treatment regimen known as multi drug therapy (MDT). This bacterium was first introduced by G.H.A Hansen in 1873 and hence it is known as Hansen's illness³. Intracellular *M. leprae* cause swelling and may destruct the cellular structures in affected individuals⁴.

Deformities may be formed in untreated leprosy patients but patient may not die due to this disease⁵. Worldwide the number of permanently disable Leprosy cases was estimated in 1995 which was 02 to 03 millions⁶. Leprosy Patients bear social, economic and mental disturbance along with physical problems^{7,8}. Females suffer these problems more as compared to male in many countries in the world^{9,10}.

In low socio economical countries leprosy may be endemic^{11,12}. In early stages the signs and symptoms may be ignored until visible disabilities have not occurred¹³. It is transmitted through nasal droplets, spitting, sneezing and coughing^{14,15}.

MATERIALS AND METHODS

A total of 110 newly diagnosed untreated leprosy patients 79 male, 31 female were taken from Marie Adelaide Leprosy Centre, Karachi. Clinical and bacterial based skin smear test for diagnostic purpose performed, control samples 55 male, 21 female were taken from general population for comparison. CBCs including, Hb concentration, RBC count, platelets, TLC, neutrophils, lymphocytes, Eosinophils and Monocytes were analysed used automated hematology analyzer.

RESULTS

Table 1: demonstrate that all fractions of complete blood picture (CBC) were non- significant ($p > 0.05$) except hemoglobin and RBC, which was decreased significantly ($p < 0.001$) and ($p < 0.004$), where as table 2 no significant difference was observed in differential leukocyte count in untreated leprosy cases when compared with control group.

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Table No.1: Comparison of Hematological Parameters of Untreated Leprosy Cases and Control

Hematological Parameters	Leprosy Cases (Untreated) (n=110)	Controls (n=76)	P-value
	Mean ± S.D	Mean ± S.D	
Hemoglobin (g/dl)	11.0 ± 1.75 **	12.7 ± 1.07	0.001
RBC (10 ⁶ /ul)	4.38 ± 0.45 **	4.55 ± 0.34	0.004
Platelets (10 ³ /ul)	224 ± 49.8	223 ± 51.7	0.909
TLC (10 ³ /ul)	7.0 ± 1.26	7.3 ± 1.04	0.136

** Statistically Significant (p<0.01)

Table No.2: Comparison of Differential Leukocyte Count of Untreated Leprosy Cases and Control

Neutrophil (%)	68.0 ± 3.56	68.0 ± 5.47	0.991
Lymphocytes (%)	27.3 ± 3.76	27.1 ± 3.63	0.803
Eosinophil's (%)	2.8 ± 0.49	2.7 ± 0.62	0.140
Monocytes (%)	1.6 ± 0.63	1.7 ± 0.58	0.943

DISCUSSION

In human body Complete blood count (CBC) is required to screen out the diagnosis of some diseases and to see various medical treatment¹⁶. Different blood counts have been used to clinical conditions since 19th century. For the estimation of CBCs an automated equipment was developed in 1950s and 1960s¹⁷. CBCs are useful to monitor whether patient need blood transfusion and plan an amount of treatment¹⁸. CBCs also includes white blood cells (WBC) count and it is broken down percentage of each type ie. neutrophils, lymphocytes, eosinophils, monocytes and immature cells¹⁹. The WBCs and its broken fractions are used to monitor different clinical conditions for diagnosis²⁰.

CONCLUSION

In this study hemoglobin and RBC's count were found decreased in untreated leprosy cases may be due to poor diet and inadequate nutrient intake.

Author's Contribution:

Concept & Design of Study: Ghulam Serwar Shaikh
 Drafting: Zafar Ali Pirzado
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Revisiting Critically: Ghulam Serwar Shaikh,

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Final Approval of version: Ghulam Serwar Shaikh

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

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