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## Haematological Parameters in Diabetic Adults - A Case Control Study.

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### ABSTRACT

This study is aimed at analyzing the hematological parameters in newly diagnosed Diabetics in comparison with non-diabetic as controls. Retrospective analysis of records of 100 newly diagnosed diabetic patients and 100 age and gender matched non-diabetic individuals both enrolled for Master Health checkups. This study was carried out during the period of January 2014 to June 2015 in the department of clinical pathology, Central laboratory of Sree Balaji medical college, Chromepet. Inclusion and Exclusion criteria were made. Our results showed that 54% of Diabetics and 60% of Non diabetic individuals were males and there is a statistically significant ( $p < 0.05$ ) increase in the Total count, ESR and Neutrophils percentage in diabetic individuals. Our study showed that hematological parameters like total count and ESR are significantly altered in Diabetics probably denoting ongoing inflammation in them.

**Keywords:** Diabetic mellitus, Total count, ESR, Lymphocytes, Monocytes.

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**INTRODUCTION**

Diabetes mellitus (DM) is a metabolic disorder which may alter various blood parameters. Alteration in biochemical parameters like lipid profile and LFT are proven facts; but very little is known about changes in hematological parameters particularly in newly diagnosed Diabetics.

**AIM**

This retrospective study is aimed at analyzing the hematological parameters in newly diagnosed Diabetics in comparison with non-diabetic as controls.

**METHODS AND MATERIALS**

This study included retrospective retrieval and analysis of records of 100 newly diagnosed diabetic patients and 100 age and gender matched non-diabetic individuals both enrolled for Master Health checkups. It was carried out during the period of January 2014 to June 2015, in the department of clinical pathology laboratory, Sree Balaji medical college, Chromepet.

**Inclusion criteria**

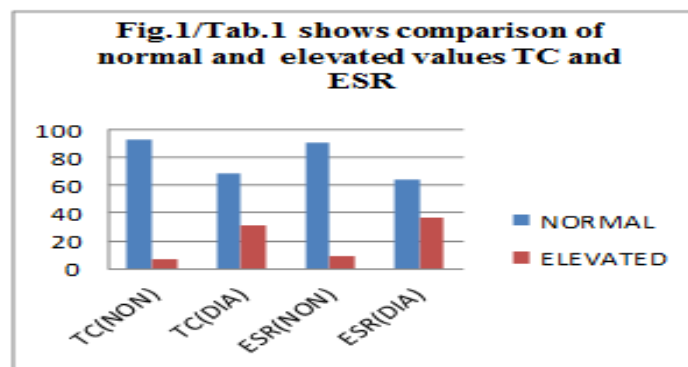
- CASE: Newly diagnosed case of diabetes (<2 years)
- CONTROL: Not a known case of diabetes

**Exclusion criteria**

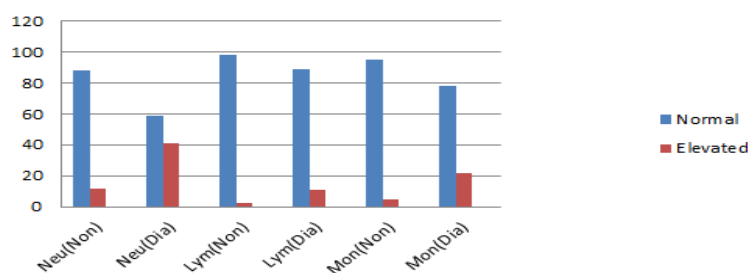
- CASES AND CONTROLS: NO H/o Fever or recent infection.
- No H/O Anemia

**RESULTS**

54% of Diabetics and 60% of Non diabetic individuals were males. Diabetic patients had elevated Total counts, ESR and Differential counts when compared to controls (Fig/Table1&2).



**Fig.2/Tab.2 shows comparison of normal and elevated levels of Differential counts.**



There is a statistically significant ( $p < 0.05$ ) increase in the Total count, ESR and Neutrophils percentage in diabetic individuals (Fig/Table3).

Tab 3: Shows mean values of various parameters

PARAMETERS	DIABETIC	NON-DIABETIC	P-VALUE
TOTAL COUNTS( $10^9$ cells/lit)	9.8435±2.6715	8.928.9±1.8807	<0.05**
ESR(mm/hr)	20.8±20.7	10.9±7.02	<0.05**
NEUTROPHILS (%)	67.3±12.5	55±8.17	<0.05**
LYMPHOCYTES (%)	29.8±9.8	28.5±8.9	0.6*
MONOCYTES (%)	4.8±5.09	4.3±2.1	0.7*

\*\* Statistical significant ( $p < 0.05$ )

\*Not significant

### DISCUSSION

Our studies showed an increase in Total WBC count with a concomitant rise in ESR. Diabetes is a pro inflammatory state [1] and hence this could be expected state, because of this state, it can be increase the risk of development of diabetic vasculopathies. These results are consistent with few other studies [2, 3]. However our study showed a rise in Neutrophils count in contrast to few of the previous studies [2].

Advanced glycation end products, oxidative stress, angiotensin II, and cytokines can stimulate Neutrophils, lymphocytes, and monocytes among diabetics [4]. Activated leukocytes can also release superoxide radicals and proteases, all of which promote oxidative stress .As results of this; they can be more prone for vascular complications .Activation of cytokines in turn, can alter the function of the cell, leading to entry of microorganism. Higher incidence of infection in diabetics has been attributed to alteration in neutrophil function [5].

Our present study proved that statistically significant increase in Total count, ESR and Neutrophils in newly diagnosed diabetics compared to non-diabetics. This could be due to ongoing inflammation in them.

### CONCLUSION

Our study showed that hematological parameters like total count and ESR are significantly altered in Diabetics probably denoting ongoing inflammation in them. Complete hemogram is cost effective; hence such periodic complete blood counts should be done for all diabetic patients in order to prevent complications.

This study also shows a clear cut increase in Total and Neutrophil counts in newly diagnosed Diabetics. This probably shows the need to derive a baseline values for all hematological parameters in Diabetics in order to compare at a later stage when complication arises. This necessitates a need to do a comparison study of hematological parameters in new Vs complicated diabetics.

### ACKNOWLEDGEMENT

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