Original Research Article

Hematological parameters in HIV/AIDS and its correlation with CD4 cell count

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Abstract

Background: Promising development have been seen in recent gears in global efforts to address the AIDS epidemic, including increased access to effective treatment and prevention programmes. Hematological parameters holds key in management of HIV/AIDS cases. **Objectives:** To see correlation of CD4 count with different haematological parameters in HIV/AIDS patients. **Material and Methods:** A cross sectional study on 100 HIV subject was carried out at Bapuji Hospital and Chigateri General Hospital attached to J.J.M. Medical College,Karnataka, India during a period of 18 months. Detailed history was taken, necessary laboratory test were done. Data was analyzed using SPSS. Percentage, p value and pearson's correlation was calculated. **Results:** Most common age group was found to be 31-40 age group with 57% cases, In present study 55% of female were involved as compared to 45% of male. Normocytic hypochromia was seen in 42% cases, microcytic hypochromia in 41% and dimorphism was seen in 17% cases. Also throbocytopenia was seen in 24% and leucopenia in 32% cases. 4% showed mild severity in CD4 count. Haemoglobin and blood cells were found to be significantly decreased with CD4 count. Alteration in blood urea, serum creatinine and LFT (total bilirubin, SGOT, SGPT) was not significant in my correlation studies **Conclusions**: There was significant correlation between CD4 and haematological profile but not in biochemical profile like LFT,KFT.

Keywords: HIV, AIDS, CD4

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INTRODUCTION

HIV infection/AIDS is a global pandemic, with cases reported from virtually every country. At the end of 2013, an estimated 35.0 million individuals were living with HIV infection, according to the Joint United Nations Programme on HIV/AIDS.[1] After reported the first case of AIDS from India, ten more cases surfaced within a year. The scenario is changing very fast HIV epidemic in India has evolved from pattern III (Introduction or extensive spread of HIV did not begin until the mid to late 1980s or the present, overall HIV prevalence continues to remain relatively low in most populations) to pattern II (Extensive spread of HIV began in the late 1970s or early 1980s. HIV transmission has been and continues to be predominantly sexual between men and women) as found in Sub-Saharan Africa and *Latin* America.[2-3] HIV infection involves hematological and biochemical manifestations. The common abnormalities like anaemia, jaundice, thrombocytopenia. Abnormalities may be attributed to opportunistic infections, ineffective hematopoiesis, drug reactions and immune cross reactions. Anaemia is common finding in HIV infection. It may also cause thrombocytopenia, granulocytopenia and antibody specific response. The most common hepatobiiliary manifestations being jaundice and hepatomegaly. HIV involves liver directly by presence of HIV P24 Kuffer cells and hepatic endothelial cells and messenger RNA within hepatocytes. Renal disorders are commonly in the form of fluid and

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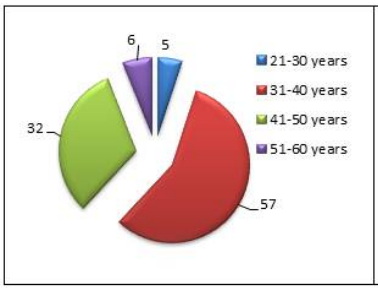
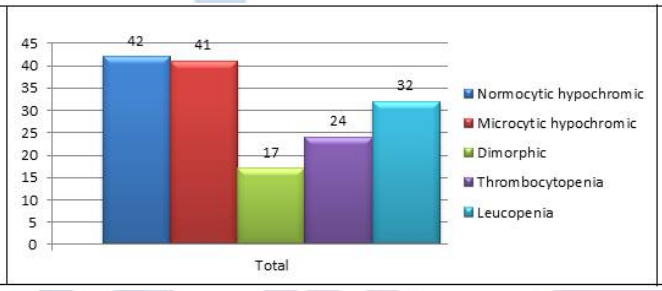
electrolyte imbalances. HIV nephropathy can lead to end stage renal disease.[4,5] It has been shown for some time that AIDS virus can persist in latent form in CD4 cells for many years and work of these scientists now provides evidence that the normal immune stimulation of CD4 cells, as may be caused by trivial day to day viral or bacterial infection, may provide the trigger that releases the virus from latency in D4 cells and leave the body defenceless with all its resistance gone, and succumbed to opportunistic infections.[6,7] There were less studies done in our area regarding hematological parameters and CD4 correlation, so we did this study on HIV/AIDS cases at our hospital.

MATERIAL AND METHODS

This was a cross sectional study carried out at Bapuji Hospital and Chigateri General Hospital attached to J.J.M. Medical College, Karnataka, India during a period of 18 months. Total of 100 HIV/AIDS cases who presented themselves to OPD / admitted in Bapuji Hospital were included in the study after fulfilling inclusion and exclusion criteria. The patients diagnosed HIV I and II reactive by ELISA method (both symptomatic and asymptomatic) and those age >18 years were included in this study. All those with previously known haematological disorder and biochemical abnormalities prior to HIV infection, cases with hepatic disorders and renal disorders due to other causes were excluded. A predetermined pretested proforma is used to record the details of history, physical examination and investigations. All the cases subjected to routine investigations including complete hemogram, CD4 count, liver function tests, renal function. **Statistical analysis:** Data was entered into Microsoft excel and analyzed using SPSS 20. Mean, SD, and pearson's correlation was carried out with $p < 0.05$ taken as significant.

RESULTS





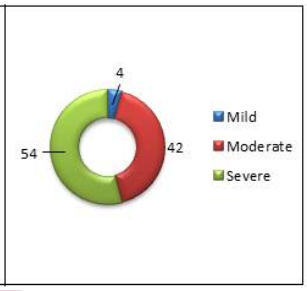


Diagram 1 **Diagram 2** **Diagram 3**

Diagram 1: Distribution as per age groups; **Diagram 2:** Distribution of study subjects according to the blood picture; **Diagram 3:** Distribution of study subjects according to CD4 count

Most common age group was found to be 31-40 age group with 57% cases, In present study 55% of female were involved as compared to 45% of male. Normocytic hypochromia was seen in 42% cases, microcytic hypochromia in 41% and dimorphism was seen in 17% cases. Also throbocytopenia was seen in 24% and leucopenia in 32% cases. 4% showed mild severity, 42% were in moderate group and 54% showed severe degree of CD4 decrease.

Table 1: Correlation between CD4 count and hematological parameters

Hematological parameters	CD4 count Pearson Correlation	p value
Haemoglobin	0.2462	0.0126*
TLC	0.2672	0.0066*
Neutrophils	0.3809	0.0001*
Leucocytes	0.2895	0.0032*
Eosinophils	-0.2116	0.0328*i
Monocytes	-0.0143	0.8867
B lymphocytes	-0.0277	0.7824
Blood urea	-0.1279	0.2003
Serum Creatinine	-0.0657	0.5120
Bilirubin	-0.1618	0.1041
SGOT	-0.1669	0.0936
SGPT	-0.1524	0.1263

*p value < 0.05 is significant at 5% level, p value >0.05 is statistically not significant. Haemoglobin and blood cells were found to be significantly decreased with CD4 count. Alteration in blood urea, serum creatinine and LFT (total bilirubin, SGOT, SGPT) was not significant in my correlation studies.

DISCUSSION

In study of 100 patients with HIV as diagnosed by ELISA method, found in OPD/IPD of Bapuji Hospital and Chigateri Hospital, Davangere, during a period of 18 months from 2015 to 2017. In this study maximum patients were between 31-40 years with 57% of all cases. Sitalakhmi S *et al*[8] found 25-55 age group as most common and in Chanrat N *et al*[9] 24-52 age group was found to be most common. In this study 55 of female sand 45 were males out of 100 cases. While male dominance was seen with Chanrat N *et al*[9] and Sitalakshmi S *et al*[8] with males forming 61% and 60% respectively. Most common type of blood picture seen in this study was normocytic hypochromic 42% was most observed in my study group. Other studies Bodey GP *et al*[10], Moore RD *et al*[11] shown most common type is normocytic normochromic blood picture. These findings were in accordance with our study. In present study shows that leucopenia observed in 32 patients out of 100 cases. Zaon LI *et al*[12] study found leucopenia in 39%, while in another study done by Bangara GP *et al*[13] had shown leucopenia in 41%. Both these results were in support of our study. In this study, thrombocytopenia was seen in 24 patients out of 100 cases. In Pechere M. *et al*[14] study thrombocytopenia was seen in 13% cases and in Sullivan PS *et al*[15] study it as 15% of total cases. Both of these findings were in accordance with our study.

CONCLUSION

According to correlation between CD4 and haematological parameters; haematological parameters like haemoglobin, total leukocyte counts showed alterations. Alteration in RFT and LFT did not have significant correlation with severity of disease.

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