To Study Various Haematological Manifestation in Newly Diagnosed HIV Patient

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Introduction

Since the initial cases of HIV/AIDS were identified in June 1981 in Los Angeles, USA, there have been tremendous advances in the field of HIV prevention, diagnosis, care and treatment globally. As per UNAIDS estimates an adult HIV prevalence of 0.8% and considerable variation between countries, 36.7 million (30.8- 42.9 million) people were estimated to be living with HIV globally. Approximately 1.8 million new infections occurred worldwide and approximately 1.0 million people died of AIDS-related illnesses. The country's epidemic is concentrated among high-risk groups and is heterogeneously distributed with wide geographic variations in the vulnerabilities that drive the epidemic. Even with this low prevalence, India has the third highest burden of HIV in the world with an estimated 2.14 million people living with HIV, 87,000 estimated new infections and 69,000 AIDS-related deaths annually. The first few cases of HIV in the country were detected among female sex workers in Chennai, Tamil Nadu in 1986, followed by reports from other parts of the country.

Material and Methods

The study was conducted in the Department of Medicine, S N Medical College, Agra. An observational study was conducted in S N Medical College Agra for a period of around 2 years between December 2017 to December 2019. The study includes, Newly diagnosed HIV positive patients, Patients willing to take participation and giving consent for study, patients not taking ART, previously diagnosed asymptomatic patient who are not on art or any treatment.

Patients taking anaemia therapy**,** taking bone marrow suppressing drugs**,** Patient not willing for partcipation in study**,** Patient known case of primary haematological disorder or other disease affecting haematological parameters such patients were excluded from the study.

Completely confidentiality was maintained regarding the identity of subjects by concealing the name and address from study proforma. Prevelance of various haematological disease are observed in patient and its correlation with cd4 count level.

Total 100 patients were included in the study with HIV positive reports in ART centre and patients in medicine OPD and various investigations were

carried out such as Haemoglobin [cyanmethhaemoglobin method],Total leucocyte count & differential leucocyte count [neubauer chamber count],Cd4 count [flow cytometry], Platelet count [ammonium oxalate method],Peripheral blood smear [leishman's stain] ,Bleeding and clotting time [dukes method and capillary tube method],Rbc morphology studies [mcv, mch, mchc], Serum iron ,serum ferretin, transferrin , iron binding capacity, Serum B12 and folic acid level, Prothrombin time, Activated partial thromboplastin time, Erythrocyte sedimentaionrate, C- reactive protein, HIV Elisa. Different data collected & inserted in microsoft excel for comparing data by chai sqaure test and student t test.A p- value of < 0.05is considered stastically signficant in all clinical comparisons at 95 % confidence interval.

Observation and Results

A total of 100 patients were taken for study from ART centre and hospital those who satisfied the inclusion and exclusion criteria

Table 1: Age and Sex distribution

Age (Yrs.)	Male		Female		Total	
	No.	%	No.	%	No.	%
≤20	2	2.74	1	3.70	3	3.00
21-30	18	24.66	18	66.67	36	36.00
31-40	36	49.32	6	22.22	42	42.00
41-50	13	17.81	1	3.70	14	14.00
51-60	4	5.48	1	3.70	5	5.00
>60	0	0.00	0	0.00	0	0.00
Total	73	100.00	27	100.00	100	100.00

chi-square = 16.1
p-value = 0.003

Table 1 describe age wise and sex wise distribution of study group. Out of 100 patient total males were 73 and females were 27 females. Highest no of males [n =36] between 31 − 40 years and females [n = 18] between 21 to 30 years.

Table 2: Hemoglobin

Hb	Male		Female		Total	
	No.	%	No.	%	No.	%
≤6	6	8.22	6	22.22	6	12.00
>6-≤9	18	24.66	9	33.33	27	27.00
>9≤13	40	54.79	12	44.45	52	52.00
>13	9	12.33	0	0.00	9	9.00
Total	73	100.00	27	100.00	100	100.00

chi-square = 6.58
p-value =0.087

In 52 (52%) patients, Hb% was between 9 and 13 gms%, 12 out of 100 patients were having Hb% below   6 gms%. In the present study though not statistically significant (p =0.087).

Table 3: CD4 count and mean Hb

CD 4	Male			Female		
	N	Mean	SD	N	Mean	SD
≤200	57	9.60	2.57	20	9.60	1.58
>200	16	11.00	2.04	7	11.46	0.90
t-value	2.005			2.929		
p-value	0.0487			0.0072		

Of the 77 cases having CD4 count less than 200, 77 cases were having Hb% less than normal. In the present study though statistically significant (p = 0.0487]

Table 4: CD4 count and TLC

| CD 4 | Male | | | | | |
| | <4000 | | 4000-11000 | | >11000 | |
	No.	%	No.	%	No.	%
≤200 (N=57)	28	49.12	24	42.11	5	8.77
>200(N=16)	4	25.00	10	62.50	2	12.50

chi-square=2.96
p-value = 0.228

The total leucocyte count ranged from 1900 cells/mm^3 to 11000 cells/mm^3, with prevalence of leucopenia in males of 49.12%. In the present study though not statistically significant ($p < 0.228$).

Table 5: CD4 count and Platelets (Male)

| CD 4 | Platelets | | | | | |
| | <1.5 | | 1.5-4.0 | | >4.0 | |
	No.	%	No.	%	No.	%
≤200 (N=57)	18	31.58	36	63.16	3	5.26
>200(N=16)	3	18.75	12	75.00	1	6.25

Chi square = 1.00
p- value = 0.605

The platelet count ranges from 0.7 to 4.5 lakhs/cmm3 with prevalence of thrombocytopenia of about 31.58% in male patient with CD4 count <200 and 18.75% with CD4 >200. In the present study though not statistically significant ($p < 0.605$)

Table 6: CD4 count and Platelets (female)

| CD 4 | Platelets | | | | | |
| | <1.5 | | 1.5-4 | | >4 | |
	No.	%	No.	%	No.	%
≤200 (N=20)	7	35.00	13	65.00	0	0.00
>200(N=7)	1	14.29	6	85.71	0	0.00

Chi -square = 1.07
p-value = 0.302

The platelet count ranges from 0.7 to 4.5 lakhs/cmm3 with prevalence of thrombocytopenia of about 35.00% in male patient with CD4 count <200 and 14.29% with CD4 >200. In the present study though not statistically significant ($p < 0.302$)

Table 7: CD4 count and mean PT

| CD 4 | Male | | | Female | | |
	N	Mean	SD	N	Mean	SD
≤200	57	14.66	2.86	20	14.65	2.61
>200	16	14.47	3.87	7	14.27	2.50
t-value	-0.217			-0.335		
p-value	0.8292			0.7405		

Mean of PT in male patient with CD4 count <200 is 14.66 and 14.65 with CD4 <200 in male and females respectively. In the present study though not statistically significant ($p < 0.940$ statistically significant ($p = 0.756$).

Table 8: CD4 count and aPTT (Male)

| CD 4 | aPTT | | | | | |
| | <30 | | 30-40 | | >40 | |
	No.	%	No.	%	No.	%
≤200 (N=57)	4	7.02	48	84.21	5	8.77
>200(N=16)	1	6.25	14	87.50	1	6.25

chi-square = 0.123
p-value = 0.940

Prevalence of aPTT>40 in male patient with CD4 count <200 is 8.77% and 6.25% with CD4 >200. In the present study though not statistically significant (p < 0.940)

Table 9: CD4 count and aPTT (female)

CD 4	Aptt					
	<30		30-40		>40	
	No.	%	No.	%	No.	%
≤200 (N=20)	1	5.00	18	90.00	1	5.00
>200(N=7)	1	14.28	5	71.43	1	14.28

chi-square = 1.42
p-value = 0.492

Prevalence of a PTT>40 in female patient with CD4 count <200 is 5.00% and 14.28% with CD4 >200. In the present study though not statistically significant (p < 0.94)

Discussion

The patient age in the present study ranged from 12 to 57 years. Coming to the age distribution about 78% of the patients fell in the age group of 21 to 40 years, which as per the fact is the sexually active part of life as well as highly productive age group. In the present study compared to male age distribution females were younger, 42% of them were between 31 to 40 years of age group. There was statistical significance to age and sex distributionAs expected a high incidence of anemia is noted in the present study which is in accordance with other previous studies. The multifactorial origin of anemia in HIV disease complicates its differential diagnosis and treatment. The commonest anemia in the present study was microcytic hypochromic anemia (62%). Normocytic normochromic anemia was found in 26% in the present study. 12 cases of each of macrocytic normochromic anemia. There was no statistical significance in the incidence of particular anemia with particular sex (p-value = 0.660 for males, p-value = 0.534 for females).

In correlation of different type of anaemias with respect to clinical stage there was increased possibility of microcytic hypochromic anaemia as clinical stage worsened. **According to Spivak JL et al-[1]** anemia was found in 18% of HIV seropositive patients, 50% of patients with AIDS related complex, and 75% of those with AIDS. **Murphy MF et al-[2]** the incidence of lymphopenia, neutropenia and thrombocytopenia in patients with AIDS was 75%, 20% and 30% respectively and in patients with asymptomatic HIV positive patients the incidence was 15%, 0% and 0% respectively.

The study was designed to ascertain the basic coagulation defects in HIV infected individuals with routine parameters like platelet count, prothrombin time and aPTT with respect to their CD4 counts. The study group (n = 100). Among the 100 HIV infected cases, 73 cases were males and 27 were females. The most of the HIV infected cases was between 20 – 40 years.

In our study, we found that PT and APTT were significantly increased in treatment positive HIV individuals. This finding is concordant with **Omoregie et al [3]**, who also reported increased PT and APTT in HIV patients. **Eefje Jong et al[4]**, also reported prolonged PT and APTT in 6% and 2% of their study subjects respectively. We also found a significant decrease in platelet count in HIV patients. **Omoregie et al.[3]** also observed a similar reduction in platelet count in HIV cases compared to controls. The cause for decreased platelet count is due to increased platelet destruction by depositio.

On comparing the platelet count, PT and aPTT in HIV positive cases with CD4 count < $200cells/mm^3$ and those with count > $200cells/mm^3$, we found that only aPTT is significantly higher in HIV cases with CD4 count less than $200cells/mm^3$. n of circulating immune complexes on platelets. **Ifeanyichukwu M et al.[5]** found significantly increased aPTT in HIV cases not on ART compared with HIV cases on ART .

Conclusion

In the present study, out of 100 patients, the commonest haematological manifestations found were anemia, leucopenia and thrombocytopenia.

Anaemia was most common abnormality followed by leucopenia.

The frequency and severity of these hematological manifestations increased with decline in CD4 count and had got significant impact on clinical outcomes and quality of life.

Hence all HIV patients should be investigated for hematological abnormalities and treated accordingly to reduce morbidity and mortality. Coagulation parameter were also affected so they should considered in susceptible patients.

References

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