Original article:

Study of hematological profile of HIV positive patients in urban population

Dr Amit Ashok Palange, Dr Manjit Sisode

Department of Medicine, P.Dr D Y Patil Medical College and Hospital , Pimpri , Pune , Maharashtra , India
Corresponding author: Dr Amit Ashok Palange

Abstract:

Introduction: HIV infection is associated with a myriad of abnormalities related to hematopoiesis. Clinically significant hematologic abnormalities are common. Impaired haematopeisis, immuen-medicated cytopenias, and altered coagulation mechanisms have all been described in HIV-infected individuals.

Materials and methods: A prospective observational study of the haematological profile with clinical correlation was carried out in a large teaching hospital. 60 Patients admitted in the ward or attending the OPD were studied, after obtaining a written informed consent. All patients had confirmed HIV infection – ELISA reactive by two different methods. Pre and post test counseling was done for all patients.

Microcytic and normocytic anemias were nearly as frequent in the study. Macrocytic anemia was less common although macrocytosis without anemia was seen in four cases. In patients where MCV > 101, bone marrow also showed gross megaloblastic change. But only 5 out 8 patients whose MCV was between 93-100 showed megaloblastic changes in bone marrow but MCV was within normal range, one had no anemia while the other had Hb of 8 gm%

Conclusion: Anemia was the commonest cytopenia in this study.Neutropenia was uncommon unlike that seen in previous studies. Thrombocytopenia was also relatively common although not always symptomatic.

Keywords: Anemia , HIV infection

Introduction:

HIV infection is associated with a myriad of abnormalities related to hematopoiesis. Clinically significant hematologic abnormalities are common. Impaired haematopeisis, immuen-medicated cytopenias, and altered coagulation mechanisms have all been described in HIV-infected individuals. These abnormalities may occur as a result of HIV infection itself, as sequelae of HIV- related opportunistic infections or malignancies, or as a consequence of therapies used for HIV infection and associated conditions. The specific evaluation of patients affected by various cytopenias will depend on the type of blood cell(s) primarily affected, while specific treatment will depend on the specific cause of the disorder. [1,2] The present study has been undertaken to Study of hematological profile of HIV positive patients in urban population.

Materials and methods:

A prospective observational study of the haematological profile with clinical correlation was carried out in a large teaching hospital. 60 Patients admitted in the ward or attending the OPD were studied, after obtaining a written informed consent. All patients had confirmed HIV infection – ELISA

reactive by two different methods. Pre and post test counseling was done for all patients.

Data Collection:

1. Using a standardized data extraction proforma, detailed history and epidemiological data was noted. A thorough clinical examination was done and the findings noted.

2. All laboratory parameters which were pertinent and relevant to the case in the aiding the diagnosis were recorded.

3. All patients were subjected to a bone marrow aspiration. As a routine aspiration was performed form the manubrium sterni. There were no complications whatsoever of the procedure and all were given analgesics after the procedure.

4. Bone marrow aspirate slides were examined independently by three pathologists and written report was obtained. A fourth opinion was taken only for unusual case

5. All bone marrow slides are preserved for further evaluation in future.

6. CD+ /CD8+ counts were not possible in many patients due to technical and financial reasons.

Results:

TABLE 1 : Incidence of the various morphological types of anemia in the study population.

Type of anemia (Hb = < 10)	No. of cases (out of 42)	Percentage
Microcytic hypochronic	19	45.3
Macrocytic normochronic	6	14.3
Normocytic normochronic	17	40.4

Microcytic and normocytic anemias were nearly as frequent in the study. Macrocytic anemia was less common although macrocytosis without anemia was seen in four cases.

TABLE 2 : Showing the correlation of peripheral smear macrocytosis and megaloblastic marrow in the study population.

MCV	No. of cases	BM megaloblastic
93-100	8	5
101-110	2	2
111-120	0	
> 120	0	
Total	10	

In patients where MCV > 101, bone marrow also showed gross megaloblastic change. But only 5 out 8 patients whose MCV was between 93-100 showed megaloblastic changes in bone marrow but MCV was within normal range, one had no anemia while the other had Hb of 8 gm%

TABLE 3 : Showing the incidence of thrombocytopenia in the study population.

Platelet count	No.of cases	Percentage
> 1.5 lac / cmm	43	71.6
60000- 1,50,000	9	15
40,000 - 60,000	3	5
20,000 - 40,000	5	8.33
< 20,000	0	0
Total	60	100

Thrombocytopenia was a fairly common finding seen in nearly 30% of study population.

TABLE 4 : Common bone marrow morphological abnormalities seen in the study population

Bone marrow feature	No. of cases	Percentage
Normal	5	8.33
Vacuolation	15	25.0
Plasmacytosis	45	75.0
Reduced iron stores	28	46.6
Megaloblastosis	9	15.0
Increased eosinphil precursors	17	28.3
Atypical lymphocytosis	23	38.3
Hypoplastic	1	1.66
Opportunistic infection	8	13.3

Reactive plasmacytosis was the commonest bone marrow morphological abnormality detected in nearly 75% of patients. Iron stores were reduced in nearly 50% of patients. Increased eosinophil precursors were seen in 30% of study population. 8 marrows showed acid fast bacilli while 2 demonstrated cryptococci.

Discussion

The dimension of the epidemic of AIDS make it certain that the spectrum of HIV infection will emerge as a very common clinical problem in the recent future. Peripheral blood and bone marrow abnormalities are common in HIV related disease and are likely to be multifactorial, involving immune mechanism, drug therapy, opportunistic infection and direct insult by the HIV virus itself. [3]This study has been conducted in a large teaching general hospital catering predominantly to a lower socio-economic class of patients. Sixty patients have been studied

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with respect to clinical, biochemical and haematological parameters.[4,5]

This study has been unique for the reason that the haematological profile has been studied n HIV positive individuals all of whom had never been on any anti-retroviral therapy and most of whom had not been on any chronic therapy for an opportunistic infection. Thus the confounding factor of the influence of various anti-retroviral drugs and other antibiotics on haematopoeisis was naturally eliminated. The patients were examined and investigated only once ours not being a prospective follow up study.[6]

In our study out of the 42 cases with anemia, 19 had microcytosis on peripheral smear the cause of which was iron deficiency as corroborated by the finding of reduced iron deficiency as corroborated by the finding of reduced iron stores on bone marrow and also by way of analysis of serum iron and TIBC levels. In many of the other studies a reticuloendothelial iron block and has been documented but reduction in iron stores has not been that frequently seen [7] This probably reflects the impact of low socio-economic conditions, prevalence of malnutrition, chronic worm infestation and alcohol related blood loss from the gastrointestinal tract.

Macrocytic anemia was seen in 6 patients which has been discussed later.

1. MACROCYTOSIS AND MEGALOBLASTOSIS :

Peripheral blood macrocytosis was noted in 10 cases in the study, 7 out of which had megaloblastic picture on the marrow (vide supra Table 11). Out of the remaining three marrow aspirate was dry in one, and the other two were chronic alcoholics. Serum B12, folate levels unfortunately could not be done to know exact cause of macrocytosis. Most of the studies on macrocytosis in HIV have implicated zidovudine as a causation of this abnormality. Geene et al. [8] reported that in patients not on zidovudine, the drug stavudine was the most common offender.

None of the patients in our study were on antiviral therapy.

Marrow megaloblastosis was noted in 9 cases in our study (15%) . In a previous study by Treacy et al. [68] marrow megaloblastosis was seen in 3 out of 20 patients (15%) In that study 2 of these patients were on chronic cotrimoxazole therapy.

Harriman et al.[9] have reported that vitamin B_{12} malabsorption is very common in the setting of HIV infection, seen in 27% of their study population, wherein serum B_{12} levels and Schilling's test were carried out.[10]

Conclusion:

Anemia was the commonest cytopenia in this study.Neutropenia was uncommon unlike that seen in previous studies. Thrombocytopenia was also relatively common although not always symptomatic.

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