Full Length Research Paper

Demographic pattern and haematological profile in people living with HIV/AIDS in a university teaching hospital

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The pandemic of HIV/AIDS remains a major public health concern. It continues to spread everyday, and as such, efforts should be made to achieve a screening or monitoring method that is affordable and accessible, especially in the resource poor settings. This retrospective study investigated the demographic pattern and haematological profile of people living with HIV/AIDS (PLWHA). Records of people living with HIV/AIDS (PLWHA) attending the clinic at the University Teaching Hospital over a five-year period were retrieved and reviewed. A total of 162 patients (PLWHA) were involved in the study and their demographic pattern as well as haematological profile was reviewed. The results of the study indicated that majority (75%) of the people living with HIV/AIDS were within the age group 20 - 49 years and belonged to the low socio-economic group. Aneamia (74%), leucopenia (16%), and lymphopenia (24%) were the haematological parameters shown by the study. A positive correlation was also established between the absolute lymphocyte count and the CD4 Count (r = 0.27, P < 0.05). It is possible that absolute lymphocyte count could be proposed as a useful tool in screening for HIV/AIDS or to monitor the disease progression especially in resource poor areas.

Key words: Demography, haematological profile, HIV/AIDS patients.

INTRODUCTION

HIV/AIDS pandemic remains a major public health concern, and the increasing spread continues to require much of the limited financial, medical and human resources (Peter and Jeffery, 1994). The epidemic is so serious that between 1981 and December 2000, 21.8 million people worldwide had died of HIV/AIDS (Sepkowitz, 2001). HIV / AIDS was first recognized in 1981 amongst homosexuals in Los Angeles, New York and California (WHO, 1993; Sepkowitz, 2001). In Nigeria, the first case was reported in a sexually active 13 year old girl from Benue State in 1984 (Isiugo – Abanihe, 1994; Federal Ministry of Health of Nigeria, 1995). Thereafter, the incidence and prevalence have been on the increase.

In this University Teaching Hospital (Olabisi Onabanjo University Teaching Hospital), the frequency of people living with HIV/AIDS presenting for medical admission increased from 0% in 1992 to 7.6% in 2001 (Ogun et al., 2003). Despite the various control measures being put in place and the introduction of the highly active anti-retroviral therapy (HAART), HIV/AIDS pandemic remains a battle yet to be conquered. HIV/AIDS is a major sexually transmitted disease (Taussig et al., 2006), and this poses a huge problem for the human race. Sex work places are less restrictive and people choose their partners for a meal or an evening at the cinema with more discretion than they do for an evening of sex.

In many of our public and private health facilities, the frequency at which PLWHA present is increasing. Some

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Table 1. The packed cell volume (PCV) values of the study population.

PCV range (%)	No. of patients	(%)
10 - 14	6	3.7
15 - 19	16	9.8
20 - 24	22	13.6
25 - 29	40	24.6
30 - 34	36	22.2
35 - 39	25	15.4
40 - 44	10	6.2
45 - 49	4	2.5
50 - 54	1	0.6
55 - 59	2	1.2
Total	162	100

*PCV < 30 indicates anaemia (Hb < 10 g).

patients present with clinical features classical enough to facilitate prompt diagnosis of HIV/AIDS, while many more present with vague or ill-defined features, and this could make early diagnosis difficult. On the other hand, despite the availability of various categories of diagnostic and monitoring techniques for HIV/AIDS, the costs of the techniques are still unaffordable to several people in the resource poor settings. This study therefore aims to increase the index of clinical suspicion by (i) identifying the haematological parameters, that could serve as poin-ters to the diagnosis in the face of non-classical presenta-tion and (ii) looking at the demographic characteristics of people living with HIV/AIDS, which could be useful in obtaining clues for early diagnosis.

MATERIALS AND METHODS

A retrospective study of HIV/AIDS patients attending the clinic (Centre for Special Studies) at the Olabisi Onabanjo University Tea-ching Hospital, Sagamu, Ogun State over a five year period (2000 - 2005) was conducted. A total of 174 case notes were retrieved, out of which 162 were selected for the study. The remaining 12 were poorly informative and so were excluded from the study.
   The haematological parameters: packed cell volume (PCV), total white cell count (WBC) and differentials (neutrophils, lymphocytes), the erythrocyte sedimentation rate (ESR), and CD4 count were obtained from the case notes of these patients. ESR (Wintrobe's method) was documented only in 144 of the patients, type of infec-tion only in 149, and CD4 count only in 148. All the 162 patients had serological and clinical evidence of HIV/AIDS. In addition to this, the demographic characteristics of these 162 patients were studied, using the British system classification to classify them into lower, middle and upper socio-economic classes (Alakija, 2000). The data were analyzed using standard statistical method (SPSS version 10.0) and the correlation between absolute lymphocyte count and CD4 analyzed.

Statistical analysis

Data entry and analysis were done using SPSS version 10.0. Val-ues are presented as mean ± SD and median ± Q (interquartile ran-

ge) as appropriate. Percentages were used to describe the propor-tions of the discrete variables while the correlation in the continuous variables was also analyzed. A P-value <0.05 was considered sta-tistically significant.

RESULTS AND DISCUSSION

The results are as shown in Tables 1 - 4. Table 1 shows the values for the packed cell volume (PCV), and more than half of the HIV/AIDS patients (51.7%) had PCV less than 30%. However, about one quarter of the patients (22.2%) had borderline values, ranging from 30 - 34%. Only a small percentage had above average values (10.5%), ranging from 40 - 59%. Table 2 shows other haematological parameters studied. Lymphopenia (abso-lute lymphocyte count < 1,200) occurred only in 24.3% of these patients. The CD4 count was below normal values (CD4<200) in majority of the patients (62.8%). Leuco-penia (WBC < 2,500) occurred only in 16% while neutron-penia (Neutrophil count<60%) occurred in 42.4% of the patients. Elevated ESR was observed in all the patients (ESR >20 mm/h), about 95% had values more than 40 mm/h.

In this study, the data for both CD4 and absolute lym-phocyte count are skewed with median ± Q (interquartile range) of 160.0 ± 120.0 and 1680.0 ± 1090.0, respec-tively. There was a positive correlation between CD4 and absolute lymphocyte count (r = 0.27, P<0.05) while there was a weak negative correlation between CD4 and ESR (r = -0.02, P>0.05). The correlation between absolute lymphocyte count and ESR is also weak and negative (r =-0.08, P>0.05). The CD4 ranges between 10-600 cells/µl and absolute lymphocyte count is 336–5980/ mm^3 while that of ESR ranges between 34.0 – 168.0 mm/h.

Table 3 shows the demographic characteristics. Majo-rity of the patients (75%) were within the age bracket of 20 to 49 years, with a male to female ratio of 2:3. The mean age was 35.6 ± 11.30 years, range 0.5 – 65 years. Majority of the patients were married (60.5%) while mino-rity were single (24.0%). About 64% belong to the low socio-economic class while 36% belong to the middle socio-economic class. None of the patients belong to the high socio-economic class. The commoner infection type was HIV-type I, which accounted for 93.3% of cases. Of the 162 patients only 6 (3.7%) died while 147 (91%) are survivors. The status of the remaining 9 (5.6%) people was undetermined (Table 4).

The study has demonstrated a significant correlation between CD4 count and absolute lymphocyte count. Among the haematological parameters, anaemia is a pro-minent feature, 52% of patients in this study were anae-mic while another 22% had borderline values of packed cell volume. Anaemia as a consistent feature in HIV/AIDS had been reported by Ogun et al. (2003).

Leucopenia (16%) and lymphopenia (24.3%) were also observed in the patients in this study, and documented by earlier workers (Amanda, 1996), although in different pro-portions. These effects of HIV/AIDS on haematological

Table 2. Other haematological parameters studied in the study population.

Haematological parameter	Values	No. of Patients	(%)
White blood cell count (WBC)	< 2,500/mm^3	26	(16)
	≥ 2,500/mm^3	136	(84)
Absolute lymphocyte counts	< 1,200/mm^3	39	(24.3)
	≥ 1,200/mm^3	123	(75.7)
CD4 count	≤ 200 cells/ul	93	(62.8)
	> 200 cells/ul	55	(37.2)
Neurophills Count	≤ 60%	69	(42.4)
	≥ 60 %	93	(57.4)
Erythocyte sedimentation Rate (ESR) (Wintrobe's Method)	0 – 20 mm/h (Normal)	0	(0.0)
	21 – 40 mm/h	7	(4.9)
	41-60 mm/h	41	(28.4)
	61-80 mm/h	77	(53.5)
	>80 mm/h	19	(13.2)

Table 3. Demographic characteristics of the study population.

Age (years)	% of the Population
0 – 9	1.2
10 – 19	6.2
20 – 29	23.3
30 – 39	31.5
40 – 49	20.3
50 – 59	12.0
60 – 69	1.9
≥ 70	0
Sex	
* Male	41%
* Female	59%
Marital Status	
*Married	60.5%
*Single	24.0%
*Widow	8.0%
*Separated	5.0%
*Divorced	2.5%
Occupational and social Status	
*Low socio-economic class	63.7%
*Middle socio-economic class	36.3%
*High socio-economic class	0%

Table 4. Indicator disease, type of infection, and disease outcome in the study population.

Parameter	No. of Patients	(%)
Indicator disease		
*Weight loss	148	(91.5)
*Pulmonary tuberculosis	27	(16.7)
*Non-specific cough	5	(3.1)
*Diarrhea + vomiting	8	(4.9)
*Skin lesions	2	(1.2)
*CNS syndrome	7	(4.3)
*Diabetes + hypertension	5	(3.1)
Type of infection		
*HIV – Type I	139	(93.3)
*HIV – Type II	2	(1.3)
*Combined (I and II)	8	(5.4)
Outcome of disease		
*Survivors	147	(90.7)
*Dead	6	(3.7)
*Uncertain	9	(5.6)

parameters were also indicated in a previous study on the effect of anti-retroviral therapy on haematological profile of people living with HIV/AIDS (Erhabor et al., 2006) While about 95% of the patients had ESR values greater than 40 mm/h, only about 62.8% had CD4 count of 200 or less. The findings of a low CD4 count in more than half of the patients (62.8%) and lymphopenia in 24.3% agree with WHO document on clinical staging of HIV/AIDS for adults and adolescents, which ascertained both lymphopenia and CD4 depletion in HIV/AIDS (WHO, 2005).

The prominent elevation of ESR in all these patients is not surprising. Although the ESR is neither sensitive nor specific when used as a general screening test, it is usually elevated in the presence of infectious diseases (Smith and Samadian, 1994) and chronic illnesses (Wians et al., 2001). In the demographic characteristics, majority of the patients fall within the age bracket 20 - 49 years, this is similar to previous study by Ogun et al. (2003), and majority of the patients belong to the low-socioeconomic group as previously reported (Ogun et al., 2003). Among

the indicator diseases, weight loss occurred commonly (91.5%) followed by pulmonary tuberculosis (16.7%). In this study 3.7% mortality was recorded as at the time of the study while there is uncertainty about 5.6%.

CONCLUSION

The positive correlation between absolute lymphocyte count and CD4 count in this study re-emphasizes the usefulness of these two parameters in the clinical staging of HIV/AIDS. A reduction in absolute lymphocyte count and a depletion of CD4 cells are typical of HIV/AIDS. Although ESR has a negative correlation with both absolute lymphocyte count and CD4 in this study, it remains exceedingly raised in HIV/AIDS. Unexplained anaemia, and leucopenia are other suspicious laboratory features. This study also showed that majority of HIV/AIDS patients belong to the low socio-economic class group, with the age range of 20 – 49 years.

Therefore, we suggest that in situations where CD4 count analysis is difficult or where it is impossible to conduct diagnostic tests for HIV screening, the pattern of the haematological parameters, especially the absolute lymphocyte count, could be useful either in making a 'guess or suspicious diagnosis' or monitoring the patient in low socio-economic adolescents and adults.

REFERENCES

Alakija W (2000). Essentials of Community Health, Primary Health Care and Health Management. AMBIK Publ. Med. Sociol. chapter, 7: 88

Amanda, M. (1996). AIDS, 10: 1057-1065.

Federal Ministry of Health of Nigeria ((1995). Annual publication, pp. 25-30.

Frank H, Wians Jnr, Jill E Urban, Joseph H Keffer, Steven H Kroft, (2001). Discriminating between Iron Deficiency Anaemia and Anaemia of Chonic Disease using Traditional Indices of Iron Status Vs Transferring Receptor Concentration. Am. J. Clinical Pathol. Issue: 115 (1): 112 – 118.

Kent A Sepkowitz (2001). AIDS – The first 20 years.The new Eng. J. Med. 344(23): 1764 – 1722.

Ogun SA, Adelowo OO, Familoni OB, Adefuye BO, Alebiosu C, Jaiyesinmi EAE, Fakoya EAO, Odusan B, Odusoga OL, Ola OO, (2003). Spectrum and outcome of clinical disease in adults living with AIDS at the Ogun State University Teaching Hospital. East Afr. Med. J. 80 (10): 513-518.

Osaro Erabor; Emmenuel Kufre, Uko Osekhuiemen, Adebayo Ejele, Confidence Unwachukwu (2006). Effect of Long-term Highly Active Antiretroviral therapy (HAART) on some Haematological Paramiters of HIV Infected Nigerians Haema; 9(1): 107 – 113. www.mednet.gr/eae/haema.

Peter P, Jeffrey H (1994). AIDS in the world. Redefining the global HIV/AIDS pandemic, Yokohama, 5 Revised WHO Clinical Staging of HIV/AIDS for Adults and Adolescents (2005). http://en.wikipedia.org/wiki/WHO Disease Staging System for HIV infection and Diseases.

Smith EM, Samadian S (1994). Use of the Erythocyte sedimentation rate in the elderly. Br. J. Hosp. Med. 51: 394.

Taussig J, Shouse RL, Lamarre M, Fitzpatrick L McElroy, P Borkarf CB, Macgowan R, Margolis AD, Strat ford D, Mclellon-lemal E, Robbins K, Heneine WA, Greenberg P Sullivan, Z Henderson K, Jafa (2006). HIV Transmission Among Male Inmates in a state prison system – Georgia, 1992-2005. JAMA 296 (2): 162 – 164.

Uche C, Isiugo – Abanihe (1994). Extramarital relations and perceptions of HIV/AIDS in Nigeria Health Transition Review 4: 111-125

WHO (1993). Global programme on AIDS: The HIV/AIDS pandemic: World Health Organization. 1: 1-2