Sandwell and West Birmingham Hospitals NHS
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EOSINOPHILIA: CLINICAL SIGNIFICANCE IN HIV INFECTED INDIVIDUALS

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INTRODUCTION

World wide 22.5 million people with HIV infection are from sub Saharan Africa and in United Kingdom one third of individuals with HIV infection are from Africa. Parasitic infections are also endemic in developing countries and co infection is common. Between a quarter and half of HIV infected individuals from developing countries have found to be co-infected with parasitic infection. Parasitic infection cause significant morbidity and can be potentially fatal.

Eosinophilia can be a marker of underlying parasitic infections. In the previous studies conducted to determine the relationship between eosinophilia and parasitic infection in HIV infected individuals, inconsistent results have been reported.

This study was conducted to determine the significance of eosinophilia in relation to parasitic infection in HIV infected individuals.

MATERIALS AND METHODS

HIV infected individuals attending Selly Oak Hospital at Birmingham between May 2008 and July 2009 were recruited for the study and based on their eosinophil count, they were classified as either eosinophilic (>400 cells / mm3) or non eosinophilic (< 400 cells / mm3). As the numbers of eosinophilic patients were small, all of them consenting for participation in the study were recruited. Non eosinophilic patients were recruited randomly.

A demographic and clinical history was taken and clinical examination performed. Three stools and a urine sample were obtained from each patient for microscopic examination. Stool was examined for ova and cysts and urine for schistosomal ova. Blood samples were obtained for schistosomal, strongyloides and filarial serology.

Chi square test was used for the statistical analysis.

RESULTS

In total 266 HIV infected individuals were recruited for the study with 96 (36%) of them being eosinophilic and 170 (64%) non-eosinophilic. 161 (60.5%) patients were male and 105 (39.5%) patients were females.

Majority of the patients were from developing country with 133 of them being from Africa. (Table-1). 64 of the 96 patients in the eosinophilic group had nadir CD4 lymphocyte count less than 200. In the non eosinophilic group, 91 of the 170 patients had CD4 lymphocyte count less than 200. Among the 96 eosinophilic patients 32 patients had prior AIDS defining illness and in the 170 non eosinophilic patients 38 had prior AIDS defining illness. There was significant association between eosinophilia and nadir CD4 lymphocyte count and prior AIDS defining illness (Table-1).

88 eosinophilic and 157 non-eosinophilic patients provided urine sample and none of them were positive for schistosomal ova. Stool samples were obtained from 184 patients (64 eosinophilic and 120 non- eosinophilic). Stool sample was positive in only one patient who had eosinophilia. This patient had both schistosomal eggs and strongyloides larvae in the stool sample.

263 patients provided a blood sample for parasitic serology. Filarial serology was negative in all of the samples. Of the 263 patients 15(5.6%) had positive parasitic serology. 13 (4.9%) patients had positive schistosomal serology and 3 (1.1%) patients had positive strongyloides serology. (One was positive for both pathogens).

11 (10.52%) eosinophilic and 4 (2.3%) non-eosinophilic patients had positive parasitic serology and the association between eosinophilia and parasitic serology was significant. (P=0.003).

Of the 154 patients from developing country 12 (7.8%) had positive parasitic serology and among the 57 patients from developed country who had travelled and lived in a developing country for more than six weeks , 3 (5.3%) had positive parasitic serology.

DISCUSSION

This study confirms the findings of recent studies from London[1], Sheffield[2] and Glasgow[3], that eosinophilia can be a useful indicator of an underlying parasitic infection in HIV infected individuals. Positive serology rate was high among those from developing country or those who have travelled to and lived in a developing country.

Stool & urine microscopy and parasitic serology are commonly used investigation for identifying underlying parasitic infection. Stool and urine microscopy are inexpensive investigation but had a poor yield. Stool examination by concentration method might have yielded a higher rate. Parasitic serology, particularly schistosomal serology is the most useful investigation. Parasitic serology has the disadvantage of inability to differentiate the current from past infections.

Eosinophilia was found to be associated with low nadir CD^4 lymphocyte count in this study and as well by Cole blunders et al4. The biological basis for this association is not clearly known.

CONCLUSION

Eosinophilia in HIV infected patients was significantly associated with positive serology for schistosomiasis, low nadir CD4 lymphocyte count and prior AIDS-defining illness. Country of origin and history of travel to a developing country are also important factors to be considered in screening patients for parasitic infection.

Table-1 Demography and disease staging of the eosinophilic and non-eosinophilic groups

	Eosinophilic patients (n=96)	Non eosinophilic patients (n=170)	
Patients from developed countries	35 (36.4%)	76 (44.7%)	
Patients from developing countries	61 (63.5%)	94 (55.2%)	P=0.119
Patient travelled to and lived in a developing country for more than 6 weeks	81 (84.4%)	131 (77.1 %)	
Patients who had never travelled to and lived in a developing country for more than 6 weeks	15 (15.6%)	39 (22.9%)	P=0.204
Nadir CD4 count <200	64 (66.7%)	91 (53.5%)	
Nadir CD4 count 201 to 500	31 (32.3%)	66 (38.8%)	
Nadir CD4 count > 500	1 (1%)	13 (7.7%)	P=0.021
CDC stage A	51 (53.1%)	117 (68.8%)	
CDC stage B	13 (13.5%)	15 (8.8%)	
CDC stage C	32 (33.4%)	38 (22.4%)	P=0.041

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