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Original Research Paper

General Medicine

ANAEMIAS IN HIV-INFECTED INDIVIDUALS DURING ANTIRETROVIRAL THERAPY AND ITS IMPLICATIONS.

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ABSTRACT whether the type of anemia in persons living with HIV/AIDS changed from the beginning of highly antiretroviral therapy (HAART) and had implications for treatment outcomes . Repeated measures linear estimated the anemia-type associated change in the CD4 cell-count, over 18 months. Estimated associations between anemia-type and time to (a) gain at least 100 CD4 cells/L . Among the 1900 with anemia at the study end, 85.3% (n = 1719) had macrocytic anemia, 12.8% (n = 300) had ACD and 2.0% (n = 200) had microcytic anemia. A substantial decline in ACD and microcytic anemia occurred in tandem with large increase in macrocytic anemia over 18 months on HAART. Interventions to mitigate all anemia—particularly ACD, is expected to improve the immune recovery rate.

KEYWORDS : HIV; anemia; anemia type; macrocytosis; microcytosis; anemia of chronic disease; ; antiretroviral therapy

1. INTRODUCTION

Treatment with highly active antiretroviral therapy (HAART) contributes to anemia resolution due to the positive effect of HAART on the differentiation and survival of erythrocytes [,2]. Anemia is by far the most common complication of HIV-infection [–] Anemia has been associated with accelerated HIV disease progression and death among persons living with HIV/AIDS (PLWHA) [] In spite of this, the overall burden of anemia in HAART treated PLWHA remains unacceptably high [,,] and is associated with a low weight gain, slower immune recovery, low quality of life, hospitalization and death [,,]. Whereas the persistent problem of anemia in individuals living with HIV is recognized, the etiology of anemia differs, may vary over time and effects on health outcomes may not be uniform by anemia type.

Of those with anemia at enrolment, more than 63% remained with anemia over 18 months of the follow-up []. This study tests the hypothesis that severity of adverse immune, clinical and patient-reported outcomes experienced over time on HAART will vary by type of anemia by exploring the following aims: To determine the prevalence of anemia of various types and To identify associations between anemia types, and changes in body mass index, CD4-cell count.At all follow-up intervals, there was no evidence of an anemia-type related difference in mean CD4 cell count.

MATERIALS AND METHOD,

This study was conducted at government medical college and general hospital,suryapet-Telangana state,This is one year prospective and eight months retrospective study.prospective study period is from jan-2019 to jan-2020 and correspondingly retrospective study period is carried for CD4 count and types of anaemia for microcytic ,anaemia on chronic diseases,and macrocytic anaemia based on the MCV value below 80 and above 100.

RESULTS

Amoung the study participants 1919,1419 showed macrocytic anaemia,300 showed microcytic anaemia,200 showed anaemia on chronic diseases with no much change in the CD4 count .

Over the 18-month study period, anemia remained highly prevalent in the sample but the type of anemia evolved significantly. Specifically, the prevalence of microcytic anemia declined steadily from 9.5% (n = 300) at enrollment to 2.5% (n = 200) by month 18. Likewise, the prevalence of ACD declined steadily from a baseline prevalence of 36.8% at enrolment to 12.8% by study month 18. Macrocytic anemia, on the other hand, increased from a baseline prevalence of 11.3% to a 53.3% prevalence by study end. The trend in anemia type prevalence over the 18-month follow-up was similar to the baseline HAART status . Among participants free of anemia at the baseline (n = 1919), four new episodes of microcytic anemia developed in two participants, 20 total new episodes of ACD developed in some individuals and a total of 1419 macrocytic anemia episodes developed in 1919 individuals between study months 6 and 18.

DISCUSSION

In line with our hypothesis, the type of anemia present at or near the beginning of HAART evolved significantly over 18 months of antiretroviral therapy among adult PLWHA from india. At an 18-month follow-up, an 82% decline in ACD and a 71% decline in microcytic anemia was accompanied by a striking 370% elaboration in macrocytic anemia type. This finding is consistent with the previously reported 17.5% to 37% decline in ACD and 53% to 84% decline in microcytic anemia matched with a 513% to 940% elaboration of macrocytic anemia in india adult PLWHA followed for either 6 months [] or 96 weeks [9] post-HAART initiation. If HAART induced macrocytosis occurs relatively close in time to the beginning of HAART, the elevated baseline prevalence of macrocytosis in this cohort could be a reflection of the short period of HAART experienced in half the sample. The exact mechanisms by which certain HAART regimen induce macrocytosis are incompletely elucidated but interference with DNA red blood cell synthesis and maturation has been reported [10,11,12]. In addition, commonly co-administered drugs in PLWHA such as Co-trimoxazole/dapsone given as prophylaxis against opportunistic infections antagonize dihydrofolate reductase and dihydropteroate synthase (a rate-limiting step enzyme in folate metabolism) leading to macrocytic anemia [11]. Furthermore, macrocytic anemia may also arise from folate/vitamin B-12 deficiency contributing to the noted profound shift from predominantly baseline ACD or a no anemia baseline to macrocytic anemia during the follow-up period as previously reported in one study from a low-income country [13].

CONCLUSIONS

In summary, over 18 months on HAART in this sample of adult from telangana ,India, the vast majority of them remained anemic with dynamic changes in the type of anemia over time. We confirm HAART related reductions in microcytic and ACD

type anemia over time as well as the striking elaboration of macrocytic anemia. The elaboration of microcytosis is associated with slower immune recovery and elevated frailty. our data suggests it may be important to weigh the potential benefit of switching to a HAART regimen with a lower associated risk of microcytosis in clinical decision-making among individuals in long-term HIV care.

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