COMPARATIVE ANALYSIS OF SURVIVAL AND GROWTH MODEL APPROACH WITH RELATION TO CD4 COUNT IN HIV- POSITIVE PREGNANT WOMEN

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ABSTRACT

Several authors have compared survival rates across different CD4 categories after patients were initiated on HAART. However, these studies focused on survival differences in these patients over a period 1-5years while on HAART. There are a large proportion of patients who are still alive on therapy since the inception of HAART in the late 2004.Low CD4+ T lymphocyte counts in HIV +Ve pregnant women are likely to be associated with a variety of factors, including many viral infections, bacterial infections, parasitic infections, sepsis, tuberculosis, coccidioidomycosis, burns, trauma, intravenous injections of foreign proteins, malnutrition, over-exertion, multiple pregnancies, corticosteroid use. In HIV some positive pregnant women on HAART, declining CD4 Count may be because of temporal changes which gets corrected over a period of time.

This paper presents a brief review of several studies documenting low CD4 counts in people who are experiencing such decline in CD4 count[4]; explained through Mathematical and statistical models that can serve as tools for understanding the temporal changes of CD4 count in HIV +Ve pregnant women. HIV/AIDS patients, over 18 years of age group, who were started on HAART during April 2004 to March-2010, had their retrospective cohort data collected from different government hospitals of Karnataka state. Survival, Growth models were employed to find out the rate of improvement of CD4 count in type-I HIV infected pregnant women. A total of 202 PLHIV pregnant women had received HAART during the study period .Among them, the mean age was 23.26±7.18 years, 75.46% had HIV infected spouses, and mean treatment follow up time from HAART initiation to onset of pregnancy was 57.0 months .Most of the patients were compliant with good treatment adherence.

The cumulative survival rate after initiation of HAART was 0.95 in survival analysis ($P \leq 0.05$, $R^2 = 79.82\%$) and 0.98 in growth model($P \leq 0.05 R2 = 81.36\%$). HIV Positive pregnant women with CD4 Count>350 µ/Dl at HAART initiation were likely to have achieved better survival rate. The rate of CD4 count decline is often much more rapid in patients where, HAART was initiated at CD4 Count <250µ/dL with clinical WHO stage-IV.Growth model can easily calculate the rate of survival; it is a best model for forecasting the mortality rate.

KEYWORDS: HAART, CD4, HIV, Growth Models, WHO, PLHIV