INTRODUCTION

HIV infected patients on combination antiretroviral therapy (cART) experience different patterns of viral suppression throughout antiretroviral treatment. Studies have found a variety of reasons why patients respond differently, such as resistance, adherence, toxicity, viral load and CD4 count at starting cART, and previous exposure to antiretrovirals (ARV).

However, little is known about how these previous patterns of viral suppression affect the risk of future virological failure in addition to traditional predictors.

AIM

To investigate whether the history of viral suppression after starting cART is predictive of future virological failure after starting a new antiretroviral.

METHODS

Inclusion Criteria

• All patients who had been on cART for at least 6 months who started at least one new ARV for any reason on or after 1/1/2003
• Patients must have achieved viral load <500 copies/ml on cART prior starting new ARV
• Patients must have at least one viral load measured after starting new ARV
• Defined as being on exactly two nucleoside/nucleotides and either a PI or ritonavir-boosted PI or an NNRTI

Factors describing patterns of prior virological suppression

• Time to initial suppression from cART initiation
• Ever rebounded (viral load >500 copies/ml)
• Number of previous rebounds
• Total time with suppressed viral load
• % time on cART with viral load ≤50 copies/ml (any periods of time where the patient was off cART and the first 4 months after starting a new cART regime were excluded)
• Size rebound
• Time since last rebound till starting new ARV
• Ever rebounded above viral load at starting cART

Statistical Methods

• Baseline is date of starting new ARV
• Virological failure was defined as one viral load measured above 500 copies/ml at least 6 months after starting a new antiretroviral
• Poisson regression analysis was used to identify the previous patterns of prior virological suppression predictive of virological failure after starting a new antiretroviral

RESULTS

The characteristics of the 1,972 patients included in the study are shown in Table 1.

Prior to baseline

 Median time to first suppression 3.9 months, inter quartile range 1.6-11.6
 1,955 (82%) experienced at least 1 rebound
 569 (30%) had at least 1 rebound 100,000 copies/ml

After baseline whilst under follow-up

 1,600 (83.5%) achieved suppression within the first six months after baseline
 957 (79.3%) patients experienced virological failure after a baseline
 124 (5.2%) patients had suppression >900 copies/ml at 1 year

Figure 1

Incidence rate of virological failure decreases with increasing percentage of time on cART suppressed prior to baseline

Figure 2

Incidence rate of virological failure decreases with increasing time prior to baseline since last rebound

Figure 3

Patients with a higher percentage of time on cART suppressed prior to starting a new antiretroviral had a lower rate of future virological failure

CONCLUSION

Patients with a higher percentage of time on cART suppressed prior to starting a new antiretroviral had a lower rate of future virological failure

DISCUSSION

Future work will look into how the importance of these patterns is affected when resistance at baseline and adherence are taken into account.