The goal of ART for people living with HIV (PLWH) is to achieve and maintain virological suppression to allow immune reconstitution, minimise the risk of resistance emergence [12], prevent HIV-related mortality, and to prevent transmission [13]. However, no data on the association between the time to first undetectable viral load (FUVL) achievement after antiretroviral therapy initiation, and mortality are available. In this study, we evaluated whether time to FUVL after ART start is predictive of all-cause mortality in a large population of PLWH.

RESULTS

Over all, 10,000 patients (pts) achieved undetectable VLS after ART start and were included in the analyses. At ART start, age was 38 (31-46) years, 7805 (78%) males, 1701 (17%) HIV-infected, 1028 (10.5%) had a previous AIDS diagnosis, CD4+ 379 (172-464) cells/μL, CD4+/CD8 ratio was 0.35 (0.20-0.55), HIV RNA 4.77 (4.00-5.16) log10 copies/mL; calendar year of ART start was 2005 (2003-2010), 153 (1.5%) started a NNRTI, 3560 (35%) a NNRTI, 4074 (40.7%) a PI and 996 (9.6%) an INSTI-based ART, 277 (2.8%) started more complex regimens. After ART start, 3611 (36.3%), 3395 (34%) and 3440 (34.5%) pts achieved the FUVL 13 months (M), 36M and 6M, respectively. Patients’ characteristics according to time of achievement of FUVL are shown in Table 1. Overall, 8781 pts had a VL determination ≥4M, 6494 pts in the interval 3M-6M and 927 in the interval ≥6M from ART start; 9312 pts had a VL determination in all the three FUVL time intervals and 2491 pts had a VL determination in 21 time interval preceding that of FUVL classification. During 4709 person-years of follow-up [median follow-up of 3.4 years (1.9-6.5)], 300 deaths for any-cause occurred among pts with FUVL ≤6M, 846 with FUVL 6M-12M, 140 with FUVL >12M. Kaplan-Meier cumulative mortality estimates at 1, 3 and 5 years (Figure 1) were higher (log-rank test: p<0.001) in subjects who achieved FUVL ≥6M [0.88 (95% CI 0.64-1.2), 2.45 (1.9-3.0) and 4.05 (3.2-4.9)] as compared to those who achieved FUVL ≤6M [0.86 (95% CI 0.63-1.2), 1.65 (1.2-2.1) and 2.53 (1.9-3.2)]. The achievement of FUVL ≥6M compared to >6M was associated with a lower risk of all-cause mortality in a single-factor analysis [HR:4.6 (95%CI: 1.08-18.7); log-rank test: p<0.001] for age, gender, HIV infection categories [HR:4.8 (95%CI: 1.04-22.1); log-rank test: p<0.001] and patients’ characteristics [HR:4.9 (95%CI: 1.04-22.1); log-rank test: p<0.001]. Multivariable sensitivity analyses were performed in different patients’ subsets in order to exclude that the observed findings might be associated with a potential misclassification of time to FUVL due to the lack of VL determinations in time intervals preceding that of FUVL classification (Table 3).

CONCLUSIONS

In a large cohort of naive HIV+ infected subjects (n=10,000), who achieved an undetectable viral load after ART start, we observed 3% of mortality during a median follow-up of 4 years. The achievement of undetectable viral load within 6 months from ART start was associated with a lower risk of all-cause mortality. Multivariable sensitivity analyses were performed in different patients’ subsets in order to exclude that the observed findings might be associated with a potential misclassification of time to FUVL due to the lack of VL determinations in time intervals preceding that of FUVL classification (Table 3).