Background

Previous studies have reported a reduction by 20-40% in hospitalization rates among people living with HIV after cART introduction. Along with a significant reduction in hospitalization rates in the last years, a clear shift in the causes for hospitalization was observed: hospitalizations for AIDS-defining illnesses declined in the most recent years and were observed in patients with low CD4+ T cells count at HIV diagnosis, while hospitalizations for non-AIDS defining illnesses doubled, with severe bacterial infections accounting for more than 25% of hospitalizations [1-3]. We aimed to evaluate the prevalence of hospital admissions in HIV-positive patients compared to HIV-negative subjects over 2010-2017 at the Clinic of Infectious Diseases, S.Paolo Hospital, Milan, Italy (SPID cohort); we also investigated the clinical and viro-immunological correlates of hospital admissions for non-AIDS bacterial infections (INF) in HIV-positive patients over 2010-2017 at the SPID cohort.

Methods

Retrospective, cross-sectional study including hospital admissions for any reason among HIV-positive and HIV-negative patients at our centre (01/01/2010-12/31/2017). The main cause of hospitalization in HIV-positive patients was grouped in 5 categories: non-AIDS defining bacterial infections (INF); AIDS-defining illnesses (ADI); liver/gastrointestinal diseases (GI); non-AIDS cancers; other (cardiovascular-renal-genitourinary-pulmonary-psychiatric-other). Each hospitalization was placed into a single mutually exclusive category. Yearly prevalence of hospital admission in HIV-positive and HIV-negative patients was calculated. Chi-square and Mann-Whitney/Kruskal-Wallis tests were used for statistics.

Results

3488 hospitalizations were recorded at our centre over 2010-2017: 1056 (30%) hospital admissions were in HIV-positive patients. There was a reduced proportion of hospitalization in HIV-positive vs HIV-negative patients in recent years (from 148/427, 35% in 2010 to 110/410, 27% in 2017 in HIV-positive patients; from 279/427, 65% in 2010 to 300/410, 73% in HIV-negative patients; p<0.0001). (Figure 1a).

The hospital admissions in HIV-positive patients were: 191, 18% in patients at first HIV diagnosis, 786, 74% in cART-treated patients (for 79, 7% patients therapeutic history was unknown) (Figure 2). Among HIV-positive patients, we observed a reduction of hospitalizations in cART-treated patients (from 120/427, 29% in 2010 to 92/410, 22% in 2017), compared to antiretroviral-naïve patients (from 28/427, 6% in 2010 to 18/410, 5% in 2017; p<0.0001) (Figure 1b).

Among HIV-positive patients, 384 (36%) hospitalizations were for bacterial infections, 223 (21%) for AIDS-defining illnesses, 219 (21%) for gastrointestinal and liver diseases, 39 (4%) for non-AIDS cancers and 191 (18%) for other. The most frequent causes of admission were bacterial infections (304/786, 39%), followed by gastrointestinal/liver diseases (196/786, 25%) among cART-treated patients and AIDS-defining diseases among cART-naïve pts (89/191, 47%) (p<0.0001) (Figure 3).

In cART-treated patients, from 2010-2013 to 2014-2017 admissions for bacterial infections remained stable (from 38% to 40%), non-AIDS-cancers doubled (from 3.3% to 6.2%) and AIDS-illnesses decreased (from 17% to 13%) (p<0.004) (Figure 4).

HIV-positive patients admitted for bacterial infections were more commonly older; cART-treated with undetectable HIV-RNA and higher current/nadir CD4+ count and presented shorter length of hospital stay, compared to patients admitted for AIDS diseases (Table 2).

Bacterial infections were represented mainly by pneumonia (206, 54%) and sepsis (71, 18%) (gastro-intestinal: 30, 8%, genito-urinary: 31, 8%, skin-soft tissue infections: 27, 7%; other: 19, 5%).

Conclusions

Most of hospital admissions over 2010-2017 at our centre are among HIV-negative patients. From 2010 to the last years hospitalization among cART-treated HIV-positive patients declined; non AIDS-bacterial infections, and in particular pneumonias, still represent the main cause of hospital admission in virally suppressed cART-treated patients. With the aging of HIV population, hospitalizations for non-AIDS cancers doubled over 2010-2017.