Background: A growing prevalence of chronic non-communicable respiratory illness is recognised among people living with HIV (PLWH). Mechanisms underlying this are unclear: one possible cause could be a greater incidence and/or severity of acute respiratory illness despite antiretroviral therapy. We therefore sought to evaluate whether the frequency or severity of acute respiratory illness differed by HIV status now that most PLWH are using antiretroviral therapy (ART).

Methods: In this prospective observational cohort study, PLWH and age, gender and tobacco smoking matched HIV negative participants were followed for 12 months with weekly documentation of any acute respiratory illness using standardised illness definitions.

We assessed severity of illness using a self-reported scale asking about 9 different symptoms and impacts, each scored out of 6 points, where a higher score corresponded to more severe symptoms. Participants recorded daily diaries during acute illnesses detailing symptoms and treatment.

To assess the relationship between participant baseline characteristics and severity of symptoms during acute respiratory illness, participant symptom scores were log-transformed and analysed using linear regression models.

Results:

Recruitment and participant characteristics

In total, 136 HIV positive and 73 HIV negative participants provided longitudinal data (Table 1). Mean (SD) ages were 50 (11) and 52 (8) years; and 78% and 75% were male. The median (IQR) CD4 count for PLWH was 686 (456-848) cells/µL – all used ART during the study (87% had a baseline HIV plasma load <40 copies/ml). When free from acute respiratory illness, respiratory symptoms were more prevalent in HIV positive than negative participants, with median (IQR) St George’s Respiratory Questionnaire (SGRQ) Total scores of 13 (6-29) and 6 (2-9) respectively (p<0.001).

Incidence of acute respiratory illness

The frequency of acute respiratory illness did not differ with HIV status: incidence rate (IRR) 0.87, (95% CI 0.70-1.08), p=0.22.

Severity of symptoms

When acute respiratory illnesses occurred, PLWH reported more severe symptoms (fold-change in symptom score 1.61 (1.28-2.01), p<0.001) (Figure 1). Higher baseline SGRQ scores were associated with greater symptom scores during acute respiratory illness; however, after adjustment in a multivariable model, PLWH still had higher symptom scores (Table 2).

Treatment and healthcare utilisation

HIV positive participants were more likely to seek advice from a healthcare professional during acute respiratory illness (42% vs 14%, p=0.003) and more likely to seek hospital outpatient assessment (for instance in an HIV ambulatory care service) 32% vs 9%, odds ration 4.73 (1.91-11.69), p=0.001. There was no significant difference in the proportion of illnesses for which participants took non-prescription medications (59% vs 54%); HIV positive participants took antibiotics during a numerically greater proportion of illnesses (22% vs 11.5%), but this difference was not statistically significant (OR (95% CI) 2.11 (0.75-5.94), p= 0.16).

Conclusions: Although HIV suppression reduces the frequency of acute respiratory illness to background levels, when these illnesses occur they are associated with more severe symptoms and greater healthcare utilisation. This is seen most often in PLWH with chronic respiratory symptoms – providing an opportunity to target interventions such as immunisations and smoking cessation that may improve patient outcome.

References


Funding

This project was funded by an British HIV Association research award (2015) and National Institute for Health Research Doctoral Research Fellowship.