

Prevalence of Chronic Lung Disease in HIV Patients

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Globally, 36.9 million people are living with human immunodeficiency virus (HIV) [1]. With the introduction of antiretroviral therapy (ART), people living with HIV (PLWH) have a longer life expectancy and decreased morbidity and mortality, but despite effective therapy the virus is not completely eradicated. Consequently, HIV is now considered a chronic disease, rather than a fatal one, in the countries where ART is available [2]. The contemporary clinical picture of HIV infection in the ART era is characterized by non-infectious diseases sometimes called HIV-associated conditions that affect PLWH [3]. The HIV epidemic has undergone a tremendous shift in life expectancy and age distribution and more than 50% of PLWH in the USA will be aged 50 years and older [3]. Additionally, the age standardized death rate attributable to HIV/AIDS has reduced by 68% in the past 20 years [4]. Given the increased life expectancy of PLWH and the higher rates of traditional risk factors in HIV-infected patients than in general population, it is not surprising that several modeling studies have forecast an epidemic burden of multimorbidity in years to come [4,5].

The effectiveness of ART to control HIV infection has led to the emergence of an older HIV population who are at risk of chronic diseases [5]. The widespread use of combined antiretroviral therapy has improved the survival of people with HIV, leading to the emergence of chronic obstructive pulmonary disease (COPD) as a noteworthy concern in this population [6,7]. After recent WHO recommendations promoting the initiation of ART, regardless of age and CD4 cell count, the burden of COPD might be increased in PLWH because of an increase in life expectancy [7]. COPD is more prevalent in HIV-infected populations; 16 - 20% of individuals with HIV infection had COPD, and poorly controlled HIV infection worsens spirometric and diffusing capacity measurements and accelerates lung function decline by about 55 - 75 mL/year. Up to 21% of HIV-infected individuals have obstructive ventilator defects and reduced diffusing capacity is seen in more than 50% of HIV-infected populations [8,9]. COPD can be viewed not exclusively as a pulmonary disease but rather as a systemic syndrome sparked and fueled by a persistent low-grade HIV-attributable inflammatory state. We speculate that even in the absence of airflow obstruction on spirometry, HIV-related lung disease can manifest with respiratory symptoms and structural lung derangement. Although not fully satisfying the global initiative for obstructive lung disease criteria for COPD, this phenotype of small airways lung disease is related to significant impairment of lung health and is associated with a high comorbidity burden. Although the high burden of COPD and HIV is clearly known, the relationship between COPD and HIV infection is still not well understood. Most recent animal study suggests that the lung may be an important HIV reservoir and chronic HIV infection, even after ART, promotes obstructive changes in the lung [10].

In summary, the success of ART in improving life expectancy in HIV-infected individuals has led to a population at increased risk of asthma and COPD. Although the mechanisms underlying the development of these lung diseases are unclear, clinicians need to have a heightened awareness of the increasing risk and manifestations of obstructive lung diseases in HIV-infected patients, and that HIV infection seems to negatively affect spirometric and diffusing capacity measurements. Caution should be used if considering inhaled corticosteroids for the management of obstructive lung disease in HIV-infected individuals on protease inhibitors. Ultimately, close collaboration and coordination between pulmonologists, general practitioners, and infectious disease physicians can ensure that the best possible care for lung disease is delivered to HIV-infected individuals in the post-ART era.

Key Messages

- COPD and asthma are more prevalent in HIV-infected populations.
- Up to 21% of HIV-infected individuals have obstructive ventilatory defects.
- Reduction in diffusing capacity is seen in more than 50% of HIV-infected populations.
- Inhaled corticosteroids should be used with caution in HIV-infected patients on regimens containing ritonavir.
- Screening spirometry and diffusing capacity testing might be needed in HIV-infected individuals with a history of smoking or respiratory symptoms.
- Routine metabolic screenings should become an essential part of routine HIV care.

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