

HIV In the Older Adult

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A 74-year old man, with a medical history of hypertension and marijuana abuse, presented with a non-productive cough, chills and progressive dyspnea on exertion for one week. On physical examination, his temperature was 100.6, oxygen saturation was 92% on room air. Lung examination revealed right posterior basal rales. Chest x-ray demonstrated a right lower lobe infiltrate with a small pleural effusion. He was started empirically on piperacillin/tazobactam for the likely diagnosis of community-acquired pneumonia. On the third day, oxygen saturation fell to 86% while on 2L of oxygen. Despite mild symptomatic improvement the day prior, a repeat chest x-ray now revealed diffuse bilateral haziness. At this point the patient was questioned further; he acknowledged a history of incarceration and multiple sexual partners. An HIV test result was positive, as were bronchial washings for *pneumocystis*; his CD4 count was 62. He was started on treatment for *pneumocystis* pneumonia.

INTRODUCTION

Since the discovery of HIV in 1981, great strides have been made in the understanding and care of patients with HIV/AIDS. With the introduction of antiretroviral therapy, even more so with **highly active antiretroviral therapy (HAART)**, HIV/AIDS has rapidly evolved to be a chronic condition. HIV prevalence in those persons over 50 is increasing, both because of the survival and thus aging of HIV-infected persons, as well as the diagnosis of new cases in older persons. With optimum viral suppression and subsequent immune recovery, young adults can be expected to live into their later years - well beyond 50. HIV in older adults requires special attention because of the differences in the disease presentation, management and the need for a higher level of suspicion to diagnose infection, compared with younger adults. The frequent coexistence of other diseases and medications with HIV has effects on both HIV epidemiology and immune recovery.

As in this case, older adults are more often diagnosed with HIV at an advanced stage by the time they present, usually for the treatment of an HIV-related illness. Late detection can result from a failure to do routine HIV risk assessment and subsequent screening in persons over age 50.¹ In addition, multiple symptoms of HIV, and the common opportunistic infections accompanying HIV/AIDS, can mimic the presentation of other diseases commonly seen in older persons. Therefore, HIV may be missed unless risk factors are known and screening obtained.

Late detection has prognostic implications. CD4 count lower than 350 at the time diagnosis and initiation of antiretroviral therapy is associated with a poorer outcome, compared with initiation of therapy at higher CD4 counts. This

may partially explain why HIV/AIDS progresses more rapidly to active illness and death in older persons. Younger persons are being diagnosed, and treated at earlier stages with higher CD4 counts. However, the more aggressive disease course may also result from concurrent diseases permissive to the progression of AIDS.² The provider should make HIV risk factor screening a part of the routine history and physical for all adults, even older patients, to improve early detection and treatment rates to improve outcomes. In addition, detection can eliminate spread and infection of others.

EPIDEMIOLOGY

The Centers for Disease Control and Prevention (CDC) estimates that approximately 1.1 million persons are living with HIV in the United States. The number of persons aged 50 years and older living with HIV/AIDS has been increasing. In 2006, persons aged 50 and older accounted for 10% of new HIV/AIDS diagnoses, and for 26% of persons living with HIV/AIDS.³ The prevalence is increasing at an even faster rate among older age groups, 60 and 70 year olds. As the population ages, and with the advent of HAART therapy, it is estimated that in 2015, over 50% of those with HIV will be over 50 years old. Similarly, new diagnoses of HIV are increasing at a faster rate in this population, compared with younger age groups.⁴

While our patient had identifiable risk factors, including history of incarceration, multiple sexual partners and African descent, in many older adults clinicians fail to elicit these risk factors in the history. Physicians need to improve screening for risk factors for HIV in elderly patients. In a study of over 300 primary care physicians in Texas, 40% of doctors rarely or never asked patients over fifty years old about HIV risk factors.⁵ Similarly, in the 2006 National Health Interview Survey, adults 65 and older had the lowest rates of HIV testing of any age group (11.4%).⁶

As a result of insufficient screening in this population, it is likely that the number of cases of HIV may be higher than current estimate. In one study in a high prevalence area, including 257 patients older than 60 years old and without any known HIV or AIDS, 6.2% of men and 8.9% of women admitted to the hospital were found to be HIV positive.⁷ It is estimated that these numbers are much higher now.

In the older adult population, men who have sex with men and intravenous drug users make up approximately 50% of the cases of HIV.⁴ Older gay men tend to be overlooked, both in the gay community and in prevention efforts in the larger society. Among the HIV risk factors identified for older gay men are homophobia, denial of risk, alcohol and other sub-

stance use, and anonymous sexual encounters.⁸ In the past, the most powerful risk factor was blood transfusion, which now comprises the smallest risk group.⁴ The fastest growing risk factor is heterosexual activity, which is also the primary risk factor among women. The percentage of women with HIV is higher among older adults when compared to younger age groups; (22.2% of persons over age 60 were women in one study, compared to 12.6% in the 30-49 age group).⁹

HOST DEFENSES AND AGING

The thymus is an important organ involved in the development and maintenance of the human immune system, and serves as the primary locus for T lymphocyte maturation. T lymphocytes are genetically diverse, and function as naïve T cells responding to new antigenic exposures, or as memory T cells responding to antigens the body has previously encountered. In particular, the activation of CD4⁺ T-helper cells triggers an immune response through a) T cell differentiation and proliferation; b) activation of B cells resulting in antibody development and secretion; and c) stimulation of other effector cells, such as CD8⁺ cytotoxic T cells and macrophages, through cytokine release and/or delayed-type hypersensitivity.

Immune senescence is characterized by decreased humoral response to immunizations that evoke T-dependent responses, such as influenza and shingles vaccines, anergy to skin tests and increased vulnerability to opportunistic infections. With aging comes involution of the thymus and subsequent reduction in thymic volumes and function. The production of naïve T cells declines with increasing age, and thymic hormone output is minimal after age 55.¹⁰ In addition, thymic function and production of naïve T cells may be inhibited by HIV infection.¹¹ HIV infection may therefore, act in concert with aging senescence to produce rapid and pronounced immune suppression, and likewise delayed recovery after initiation of HAART.

Chemokine co-receptors on T cells have been shown to play an important role in the pathogenesis of HIV. Drugs blocking these co-receptors have been developed, and have shown promising results in the treatment of HIV. Aging changes in T-cell receptor expression, such as increased expression of the CCR5 co-receptor, have been noted and have the potential to accelerate disease progression.¹² Additionally, normal aging changes, such as decreased vaginal lubrication and thinning of the vaginal mucosa, put older women at higher risk for HIV infection during intercourse.¹³

CONCLUSION

HIV in the older adult is of growing concern both because the number of HIV-positive persons over age 50 will continue to increase and because older adults have a poorer prognosis. Earlier detection to initiate treatment as well as to reduce transmissibility is vital. The number of new cases can be reduced by increasing preventive measures targeting the older adult, as well

as early diagnosis and treatment to reduce the infection rate. Physicians should embrace routine screening of older adults, consistent with CDC recommendations, which advise routine screening up to age 64, rather than relying on testing only when there is clinical suspicion. At the same time, physicians should routinely counsel older adults on safe sex practices. Finally, more research needs to be done on the immune system changes that occur with age and how they may be ameliorated with an aim to improve treatment options for older adults.

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