AIDS and the Elderly

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Individuals 50 years of age or older continue to account for at least 10% of AIDS cases reported to the Centers for Disease Control and Prevention in recent years. Little research is devoted to addressing the specific issues affecting diagnosis, treatment, and prevention of AIDS in older Americans. Survival rates among elderly individuals infected with human immunodeficiency virus (HIV) are consistently decreased in comparison with those for younger patients. Elderly individuals also are less likely to use a condom during sexual intercourse or to participate in routine HIV testing. This article reviews the current literature concerning the changing epidemiology of AIDS among older Americans. The article also addresses AIDS-related morbidity and mortality, treatment issues, and HIV-prevention behaviors among the elderly. Enhanced clinician awareness of HIV in the elderly, along with further research concerning HIV treatment and prevention, is necessary to improve survival and outcome for those patients.

The epidemiology of HIV infection has markedly changed over the past decade. Despite changes in the demographics of HIV-infected patients, two factors have remained constant: (1) persons 50 years of age continue to constitute 10% of the adult AIDS population in the United States [1], and (2) survival is consistently shorter among patients with AIDS who are 50 years of age [2–10]. In addition to accounting for 10% of those with AIDS, patients 50 years are at particular risk for morbidity and death because their AIDS is more likely to be diagnosed later in the course of the disease. Elderly patients with AIDS have many unique issues regarding manifestation, treatment, and prevention of HIV disease. This article reviews recent literature concerning HIV with regard to epidemiology, morbidity, mortality, treatment issues, social issues, and prevention of infection for older Americans.

Epidemiology

Before 1989, 10.4% (11,984) of the adults with AIDS who were reported to the Centers for Disease Control and Prevention (CDC) were 50 years of age. Seven percent of all reported adults with AIDS were 50–59 years, 2.4% were aged 60–69 years, and <1% were aged ≥70 years [1]. Although contaminated blood products accounted for only 1% of cases among persons aged 13–49 years, receipt of contaminated blood products was the major risk factor for 15% of patients ≥50 years of age (6% of persons aged 50–59 years, 28% of persons aged 60–69 years, and 64% of persons aged ≥70 years had AIDS related to contaminated blood products) [1].

In 1996 the CDC reported that persons ≥50 years of age accounted for 7,459 AIDS cases, or 11% of all AIDS cases involving patients aged ≥13 [2]. Of the patients aged ≥50 years reported in 1996, 48% were aged 50–54 years, 26% were aged 55–59 years, 14% were aged 60–64 years, and 12% were aged ≥65 years. In contrast to the 15% of AIDS patients aged ≥50 years who, before 1989, reported receipt of blood products as the mode of transmission, in 1996 only 2.4% of AIDS patients aged ≥50 years and 1.1% of those aged 13–49 years reported receipt of blood or blood products as the mode of transmission [2]. Routine HIV screening of blood donations (beginning in 1985) and implementation of donor deferral has decreased the number and proportion of AIDS cases associated with contaminated blood products. However, despite the decrease in the proportion of AIDS patients infected through contaminated blood products, the proportion of reported AIDS patients ≥50 years of age has not decreased. Instead, the percentage of AIDS cases involving persons aged ≥50 years has remained stable at 11% since 1991 [1, 2].

While patients aged ≥50 years who were reported in 1996 were less likely to relate receipt of blood products than were those of the same age group reported in 1989 (2.4% vs. 15%), patients aged ≥50 years who were reported in 1996 were also less likely to have “men who have sex with men” (MSM) as the main mode of transmission than were those of the same age group reported before 1989 (36% vs. 60%). In contrast, persons aged ≥50 years who were reported in 1996 were more likely to note “no reported risk” (25.8% vs. 7.6%) and “homosexual contact” (14.5% vs. 4.5%) than were those reported before 1989 [1, 2].

In 1996 the CDC reported that MSM accounted for 35.9% of cases involving persons aged ≥50 years and thus accounted for the highest percentage of cases by exposure category among this age group. MSM also accounted for the highest percentage...
of cases among patients aged 13–49 years. However, the second highest percentage of cases for patients aged ≥50 years was associated with “no reported risk” (25.8%, vs. 15.6% for patients aged 13–49). Injection-drug use was the third most frequently reported risk factor (26%) for patients aged ≥50 years, but a significantly lower proportion of persons aged 13–49 years reported injection-drug use (19%). Finally, a higher percentage of patients aged ≥50 years (14.5%) than of those aged 13–49 years (12.7%) reported heterosexual contact as the mode of exposure to the virus. In summary, in 1996 AIDS patients ≥50 years of age were more likely than those aged 13–49 years to be reported to the CDC with either “no risk reported” or heterosexual contact as a risk factor [1, 2] (Table 1).

Morbidity and Mortality

Numerous studies corroborate that AIDS survival is inversely proportional to age at the time of AIDS diagnosis. Studies show that increasing age (specifically, ≥50 years) has statistically shortened survival as compared with survival of younger patients [3–15, 16]. Skiest et al., in a case-control study that compared 43 AIDS cases aged ≥55 years to 86 patients aged <45 years, showed that an age of ≥55 years was predictive of a decreased AIDS-free interval and decreased survival from time of HIV diagnosis [3]. Multiple other studies have shown similar findings. Ferro and Salit studied AIDS-free survival among HIV-infected patients of age ≥50 years [4], Operskalski et al. showed that AIDS-free survival was statistically correlated with age at diagnosis and not HIV risk factor [5], and Phillips et al. compared AIDS-free survival of hemophiliacs of age ≥30 years vs. younger [6]. In addition, Blaxhult et al. and Sutin et al. demonstrated that age at infection was significantly predictive of survival among patients who were infected with HIV through blood transfusion [7, 8].

Skiest et al., however, found that while an age of ≥55 years was associated with decreased AIDS-free survival, it was not associated with decreased survival in terms of time of AIDS diagnosis to death. In addition, they found that there was no significant difference in AIDS-defining diagnoses between the older and younger age groups. They interpreted this finding to indicate that the natural history of progression from HIV infection to death is affected not only by age at diagnosis but also by other factors, including comorbidities, in this population. They found that weighted comorbidity indices based on comorbid conditions in their patients (such as cardiovascular disease, cerebrovascular disease, chronic lung disease, diabetes mellitus, and tumor) were statistically significant predictors of shortened survival, independent of an age ≥55 years. (An age of ≥55 years also remained predictive of decreased survival, independent of the comorbidity variable [3].)

In addition to the effect of comorbidity in this population upon shortened survival, Skiest et al. hypothesized that the decreased survival of AIDS patients ≥55 years of age may be attributable to physiological mechanisms associated with aging, such as the “natural” decline of the immune system (specifically, T cell activity) that occurs with aging, higher viral load after seroconversion, and increased drug intolerance among patients aged ≥55 years. Finally, they hypothesized that provider-related effects, such as decreased use of antiretroviral agents in elderly patients and the lack of recognition of HIV/AIDS in this population by health care providers, resulted in late diagnosis and treatment of infection and poor outcome [3].

While few definitive data illuminate the role of decreased immune function in poor survival of patients ≥55 years of age [17–20], several studies have documented late diagnosis of HIV infection in the elderly [1–4, 6, 11]. The 1996 CDC surveillance data on AIDS in persons ≥50 years of age showed that such persons were more likely than younger AIDS patients to die within the same month as their AIDS diagnosis [2]. Ship et al. reported similar findings in their article on surveillance data from 1989. They found that among people 13–49 years of age, 10%–12% had AIDS diagnosed within the same month of death, as compared with 16%–37% of patients aged ≥50 years [1]. Ferro et al. also showed that older patients were significantly more likely to meet criteria for AIDS at the time of the diagnosis of HIV infection than were the younger patients in the control cohort [4]. As shown in the next section, HIV infection is commonly diagnosed in the elderly after significant workup and treatment of other diseases have failed, delaying the diagnosis of HIV infection from months to years. In some cases, the diagnosis of HIV is made only after the postmortem examination is completed [21].

Diagnostic Issues

The difficulties in diagnosing HIV infection become particularly challenging in patients ≥50 years of age because of the medical problems that are common in the elderly and easily

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<th>Table 1. Proportions of AIDS cases reported in the United States, 1991–1996, by age and exposure category.</th>
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<td><strong>Percentage of cases in indicated age group</strong></td>
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<td><strong>HIV exposure category</strong></td>
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<td>Heterosexual contact</td>
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<td>Receipt of blood products or blood transfusion</td>
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**NOTE.** Data are from the CDC [2].
confound the diagnosis. Sabin has described AIDS as the new ‘‘great imitator’’ because, like syphilis, it presents in ways that mimic other diseases [22]. Although elderly patients with AIDS appear to present with the same opportunistic infections as younger patients, they often are initially misdiagnosed as conditions that occur among older patients. Several case studies illustrate that older patients with AIDS who present with symptoms of opportunistic infection often undergo the workup and treatment for other disease processes such as cerebrovascular disease [23], Alzheimer’s disease [21, 22, 24, 25], bacterial or viral pneumonia [11, 26], malnutrition [23], and occult malignancy [12, 23]. Thus, symptoms that would suggest HIV/AIDS in a younger patient may be overlooked in the older patient and, therefore, the diagnosis of HIV infection is made late in the course of disease.

Several studies have shown that there is no significant difference in the prevalence of AIDS-defining opportunistic infections between older and younger patients infected with HIV, and all concur that Pneumocystis carinii pneumonia (PCP) is the most common opportunistic infection in older patients. Ferro et al. reported with regard to their sample of 33 that PCP, Kaposi’s sarcoma, and HIV encephalopathy were the most common AIDS-defining conditions for both older and younger patients [4]. Skiest et al. also found that PCP was one of the most common opportunistic infections in older and younger AIDS patients and also reported that esophageal candidiasis and disseminated Mycobacterium avium complex infection were other common opportunistic infections [3]. More recently, Gaeta et al. reported from the 1993 CDC surveillance data that among patients ≥ 50 years of age, the most common opportunistic infections (in order of frequency) are PCP, wasting syndrome, candida esophagitis, and Kaposi’s sarcoma [11]. Finally, the 1996 CDC surveillance report on persons with AIDS aged ≥ 50 years also corroborates these findings, adding that older individuals were significantly more likely to develop wasting syndrome and HIV encephalopathy than were patients aged 13–49 years [2].

Despite the similar prevalence of opportunistic infections between AIDS patients aged 13–49 years and those aged ≥ 50 years, older patients often have poorer outcomes related to the AIDS-associated opportunistic infections. Wallace et al. reported that elderly AIDS patients are uniquely at risk for higher morbidity due to opportunistic infections such as PCP (because in elderly patients lung disease progresses rapidly); tuberculosis (because many older individuals have been exposed to it early in life and are more likely to develop disseminated infection); and herpes zoster (because of disseminated infection, acyclovir resistance, and prolonged time to healing) [25]. Therefore, older AIDS patients are at higher risk for late diagnosis of HIV infection as well as for morbidity from common opportunistic infections than are younger AIDS patients.

In addition to AIDS-defining illnesses, there have been several case reports of HIV presenting ‘‘atypically’’ in older patients with AIDS. In each case, the diagnosis of HIV infection was significantly delayed because care providers thought that HIV infection was very unlikely. Fillit et al. and Boudes et al. described idiopathic thrombocytopenia and other pancytopenias as initial manifestations of HIV infection [27, 28]. Vadillo et al. reported overwhelming sepsis from Mycobacterium tuberculosis infection as the initial presentation of HIV infection [29]. In addition, Kaplan et al. [30] reported that malignancy was a common presentation of HIV infection in older adults (14% of their study population developed malignancy).

While older AIDS patients most commonly developed malignancies associated with HIV, such as Kaposi’s sarcoma and non-Hodgkin’s lymphoma, Kaplan et al. also reported that three-fourths of the solid tumors in HIV-positive individuals occurred in older patients [30]. Dermatologic manifestations are common presenting symptoms of HIV infection in older individuals. Newcomber described four elderly HIV-positive patients, each presenting with one of the following dermatologic symptoms: seborrheic dermatitis, tubercular infection of the forehead, lymphoblastic lymphoma, and herpes simplex virus infection of the buttocks [31].

New-onset dementia is a frequent presenting and often diagnostically difficult manifestation of HIV infection in older patients. Neurological complications in older AIDS patients present a specific problem because Alzheimer’s disease is prevalent in this population. Weiler et al. reported a case of an elderly patient presenting with progressive dementia who was initially treated for Alzheimer’s disease [24]. Mirra described the case of a 57-year-old man for whom the presumptive diagnosis was Alzheimer’s disease, but on neuropathological examination after his death, no neurofibrillary tangles or neuritic plaques were noted. It was later discovered that this person was in a high-risk group for HIV infection [21].

Several papers delineate the clinical differences between the dementia produced by Alzheimer’s disease and the dementia of HIV infection [16, 22, 24, 25, 32]. The authors report four major differences. First, HIV is associated with subacute encephalitis, which eventually leads to a subcortical dementia and not cortical dementia. Although AIDS dementia and Alzheimer’s disease are both characterized by decreased attention and concentration, apathy, social withdrawal, and psychomotor retardation, Alzheimer’s disease is more likely to be associated with aphasia and other manifestations of cortical dysfunction than is AIDS dementia. Second, HIV-related dementia progresses more rapidly and may become evident over months, as opposed to Alzheimer’s disease, which usually progresses more slowly. The progression of HIV-related dementia is also more often associated with peripheral neuropathies, myelopathies, and general physical complaints, such as weight loss and fatigue.

Third, HIV-related dementia may be associated with mildly elevated protein levels in the CSF, and ~25% of patients will have mononuclear CSF pleocytosis. Alzheimer’s disease is a diagnosis of exclusion and is not usually associated with CSF abnormalities. Finally, HIV-related cognitive abnormalities of-
ten improve with antiretroviral therapy and thus may present as a reversible cause of dementia [24, 25].

Treatment

To date, no studies have indicated that older AIDS patients should be treated differently for HIV disease. However, antiretroviral treatment, prophylactic therapy, and treatment for opportunistic infections of older AIDS patients have not been extensively studied. Clinical drug trials often exclude older patients because of multiple medical problems or non-HIV-related medication regimens. In the United States, patients over 60 years of age were excluded from clinical trials until 1993. Therefore, there are very few current data specifically concerning older patients and HIV medications. However, two studies and several anecdotal reports illustrate important ideas that could affect the treatment of older patients. In a study of 111 hemophiliacs, Phillips et al. noted that patients aged >30 years were significantly more likely to develop AIDS-defining opportunistic infections at consistently higher T-cell counts [6]. They concluded that it may be prudent to begin prophylactic treatments for AIDS at higher T-cell counts for these individuals. These data can be extrapolated to imply that such precautions could also benefit patients aged ≥50 years.

In the second study, Sauvageon-Matre et al. found that there was a significant decrease in the elimination of zidovudine in elderly patients. As a result, they reported that while taking recommended dosages, elderly patients commonly had toxic blood levels of zidovudine [33]. In addition to the findings of previous studies, other drug toxicities, idiopathic drug reactions, and medical contraindications to antiretroviral therapy have all been reported anecdotally with regard to elderly patients [23]. Adler et al. hypothesized that elderly patients are at increased risk for drug toxicity because of age-related losses of renal function, liver function, and albumin levels. In addition, they speculate that patients with multiple medical problems who are taking many different classes of medications are at high risk for unforeseen drug interactions and hypersensitivities [17].

Finally, very little literature and study has been devoted specifically to the role of protease inhibitors and aggressive antiretroviral triple therapy in elderly patients. Few data have been published concerning the specific response of older AIDS patients to new HIV antiretroviral treatments, and currently there are no guidelines for specific antiretroviral treatment modalities for patients ≥50 years of age.

Prevention

HIV prevention in the elderly is difficult, often for the same reasons that HIV infection is diagnosed late in the elderly. Health care professionals rarely consider sexually transmitted diseases (STDs) in the elderly. In several studies, routine HIV testing in the elderly was shown to be uncommon [8, 34–39]. Schable et al. reported that elderly women with AIDS were more likely to be tested for HIV in the hospital than younger women and were significantly less likely to have been offered routine HIV testing [34]. Gordon et al. also reported in their study of older AIDS patients that 56% of elderly patients were tested after the onset of AIDS-defining illnesses [12]. Stall and Catania showed, from the National AIDS Behavioral Surveys data, that 96% of respondents ≥50 years of age in cities with low HIV prevalence reported never being tested for HIV, and 93% of respondents ≥50 years of age in cities with high HIV prevalence reported never being tested for HIV [35]. Finally, Gerbert and Maguire found that fewer than 11% of persons over the age of 50 years reported that they had ever discussed AIDS with their physician [36].

In addition, HIV screening studies in large metropolitan hospitals show that HIV seropositivity exists among the elderly, but the diagnosis is commonly not recognized. Schoenbaum and Webber found HIV seropositivity in a small percentage of a random sample of patients aged ≥45 years seen in a New York City emergency department who were not previously known to be HIV-positive [37]. El Sadr and Gettler reported that from a cohort of hospitalized patients ≥60 years of age who were not known to be HIV-positive, 5% of serum samples tested positive for HIV antibody [38].

While providers are often unaware of HIV in the elderly, the elderly themselves appear to be unaware of the prevalence of HIV within their age group. It has been shown that older Americans’ sexual activity continues into the later years of life [40, 35]. Behavioral studies show that while the elderly continue to engage in sexual activity, they are likely to practice HIV prevention [35–39]. Schable et al. report that in a cohort of women aged ≥50 years with AIDS, 86% reported that they had never used a condom within 5 years of knowing their HIV status. The investigators found this percentage to be statistically significantly greater than that of younger women [34]. Data from the National AIDS Behavioral Surveys confirm that condom use is infrequent among older Americans. Stall and Catania showed that older Americans were one-sixth as likely as Americans in their 20s to use condoms during vaginal or anal intercourse [35]. They also reported that of sexually active respondents aged 50 years or older, 82.9% in high-risk cities and 92.4% in low-risk cities said they never use condoms. Catania et al. hypothesize that sexually active older individuals are at higher risk for HIV viral entry because of age-related mucosal disruption [41]. Therefore, it is particularly important for the elderly to practice condom use during sexual intercourse.

The prevention of other STDs besides HIV disease also needs to be addressed in the older population. Gordon and Thompson found that of 32 HIV-infected elderly patients, 10 (31%) were known to be rapid plasma reagin–positive prior to their HIV infection diagnosis [12]. Similarly, Berinstein and
Hertogh showed that of 35 elderly patients with recently acquired syphilis, only 4 patients were tested for HIV, of whom 2 were found to be HIV-positive [42]. Therefore, HIV testing, STD testing, and condom use are areas that need to be addressed and encouraged in the elderly population.

Conclusion

Though HIV infection is commonly considered a disease of young people, HIV infection in elderly patients continues to present a challenge for health care providers. Physicians who take care of elderly patients need to recognize the following: (1) 10%–11% of all AIDS cases continue to involve persons ≥50 years of age; (2) the conditions of elderly patients who are not known to be HIV-positive are commonly misdiagnosed as other diseases such as cerebrovascular disease, Alzheimer’s dementia, bacterial or viral pneumonia, malnutrition, and occult malignancy; (3) common diseases of the elderly still occur in HIV-positive individuals, and symptoms of opportunistic infections can be easily confused with symptoms of other comorbidities; and (4) progression of HIV disease is often more rapid in older individuals, as a result of late diagnosis, delays in treatment, or intrinsic immune dysfunction.

Health care providers need to discuss sexual behavior with their elderly patients as well as educate them about the importance of early HIV testing, especially because of the expanded availability and efficacy of antiretroviral therapies. In addition, it is also important for providers to offer elderly patients information concerning reducing their risk for HIV disease and other STDs, as well as routine STD testing.

More research concerning HIV in the elderly is needed. Many of the studies to date have had very small study populations and therefore were prone to bias. Without larger studies, it is difficult to determine the intrinsic effect of age-related immune dysfunction vs. the effect of late diagnoses and treatment on the progression of HIV infection in elderly patients. In addition, studies addressing the specific mechanisms of immune dysfunction in elderly HIV-infected patients would yield important data for both the general geriatrics literature and the HIV literature. Additional research is also needed concerning treatment options for older HIV-infected patients.

Data from clinical trials need to address specific outcome measures for elderly HIV-infected patients, and guidelines need to be developed concerning antiretroviral therapy for HIV disease and prophylaxis for opportunistic infections for patients ≥50 years of age. Finally, behavioral research needs to be conducted concerning HIV risk behaviors among the elderly. Studies that evaluate the level of HIV-related education among the elderly as well as caregivers to the elderly would help determine current problems in HIV education and outreach. Further study in each of these areas would provide important data for improvement of diagnosis, treatment, and prevention of HIV infection among the elderly population.

References


