HIV Disease and Aging
The Hidden Epidemic

Barry Ress, RN, MS, ANP

Mr. Jones, a 75-year-old widower, has been admitted to the critical care unit with severe hypoxia. Although intubated and receiving mechanical ventilation, he is conscious and able to follow commands. Standard empirical antibiotic treatment has not been successful, and sputum cultures have so far not indicated any diagnosis. He has a body temperature of 39.5°C (103°F), bilateral patchy infiltrates on chest radiographs, a white blood cell count of 3.2 \times 10^9/L, and a serum lactic acid dehydrogenase level of 3897 U/L. In addition, in the past year, he has had progressive dementia, weight loss, and marked cervical lymphadenopathy. Results of a previous workup included computed tomography that showed mild cortical atrophy; normal levels of thyroid-stimulating hormone, vitamin B₁₂, and folate; serological tests that were negative for syphilis; and normal serum levels of electrolytes, calcium, and magnesium. The provisional diagnosis is Alzheimer dementia. Previous lymph node biopsy showed only nonspecific reactive changes, but a repeat biopsy is being considered to rule out lymphoma.

Critical care nurses have long taken care of (1) older adults and (2) patients with human immunodeficiency virus (HIV) disease. Care has changed as patients with HIV infection have had access to better, life-prolonging treatments while experiencing sometimes life-threatening adverse effects of those treatments. New treatments and technologies have similarly changed care for patients in the later decades of life. However, although issues have changed for both patients with HIV disease and older patients over the years, both populations have continued to require critical care from time to time.

These populations are often considered distinct in both demographics and characteristics. HIV disease has often been stereotyped as a disease of the young. Similarly, the elderly are often mistakenly thought to be not at risk for the disease. Because of this misperception of exclusivity, providers who care for one population may think they neither need nor have the skills to care for the other population. I present some current findings that dispel myths that HIV disease does not significantly affect older persons and that skills in care for one of these populations do not translate to care for the other. Key implications for critical care nurses are presented. For purposes of this article, “older” patients are defined as patients who are 50 years or older in order to include information from the widest variety of sources in an area in which research is still sparse. This definition is not inconsistent with community standards.

Epidemiology

When the acquired immunodeficiency syndrome (AIDS) epidemic was in its infancy in the early 1980s, the syndrome was characterized as a disease of young, gay white men. One early exception was the occurrence of transfusion-associated AIDS in older patients. Patients more than 50 years old accounted for 10.4% of the total number of AIDS cases in adults.
patients >12 years old; transfusion-related AIDS accounted for 15% of cases in patients 50 or older and for 64% of cases in patients 70 years or older.6 With the advent of the HIV antibody test in the mid-1980s and its ensuing use in the screening of blood products, the risk of acquiring HIV in a transfusion plummeted. Today the risk of acquiring HIV is further decreased by autologous donor procedures, reduction of blood loss in surgery, and other alternatives to transfusion.

With these changes, a decrease in the number of older adults with HIV/AIDS might be expected. Instead, the number has held steady and in some instances has increased. Currently, about 11% of adults with AIDS are estimated to be more than 50 years old. Risk factors in adults older than 50 are now primarily male-male sexual contact and use of injection drugs. Significantly, among older adults, cases due to male-male sexual contact are decreasing, and cases among older patients who report heterosexual contact or no risk are increasing, to 40%.7

In addition, the estimated number of cases in older adults may actually be falsely lowered by the tendency of patients and healthcare providers to discount the need for HIV testing in this age group.4 Compared with their younger counterparts, persons more than 50 years old who have at least 1 HIV risk factor are one fifth as likely to have been tested for HIV and one sixth as likely to use condoms.3 These characteristics may delay diagnosis of HIV infection in older patients until marked clinical disease or even death ensues.

At the same time, patients with HIV disease are living longer. The advent of highly active antiretroviral therapy (HAART) in the mid-1990s led to the picture of HIV disease as being a more chronic, manageable disease instead of an inexorably progressive terminal illness.8 Use of HAART can also mean that more patients with HIV infection are having an opportunity to get older.

In sum, critical care nurses can expect to see older patients with HIV disease, whether the healthcare team recognizes the disease or not. Astute assessment of risk factors may lead to more timely diagnosis of HIV disease in older patients. The trepidation that some may feel about discussing the subject of HIV risk with older persons can be allayed in part by the results of a survey that indicated that in general, less than 10% of patients said they would be unwilling to answer a physician’s questions about their sexual behavior.11

Many changes in the immune system take place with aging. These include the loss of some appropriate immune responses and an increase in others that may be detrimental.

Mr Jones’ granddaughter Natalie comes in to visit and takes you aside because she is being asked to discuss code status (eg, wishes for resuscitation and life support). She confides that this situation is all too much for her because her cousin had pneumonia last year and ultimately AIDS was diagnosed. Even though the cousin is doing better now, Natalie feels overburdened with care demands and feels she has nowhere to turn. On further discussion, you find that since the death of his wife several years ago, Mr Jones has had several girlfriends, and Natalie suspects that he may have used injection drugs in the distant past. To Natalie’s knowledge, he has never been tested for HIV before.

Clinical Issues

Studies of older patients in the modern era of HIV treatment have interesting, and sometimes mixed, results. Not surprisingly, in at least one study,12 older patients with HIV disease had more morbidity due to both HIV and non-HIV causes than did younger patients with the disease, although studies done in the era of more common use of HAART might have different results. Earlier investigations did confirm suspicions that compared with younger patients, older patients with HIV disease tended to have clinical signs and symptoms of the disease later in the course of disease and to be sicker.13 However, results of more recent studies14,15 of adult patients receiving HAART indicate similar virological responses to HAART, mixed results in terms of immunological responses, different adverse effects, and perhaps differences in adherence to medication between age groups.

Many changes in the immune system take place with aging. These include the loss of some appropriate immune responses and an increase in others that may be detrimental. Of particular note is the involution of the thymus by middle age,16 which may or may not lead to problems with...
immune recovery after suppression of the virus with HAART.

In addition, in otherwise successfully treated patients, adverse effects of HAART such as increased serum levels of lipids and impaired glucose metabolism may increase the risk of cardiovascular disease beyond what might normally be expected. Older patients may also find HAART more of a challenge because of decreased renal and hepatic capacity and comorbid conditions such as heart disease and diabetes.

Older patients with HIV disease who present acutely ill are a particular challenge. Because the disease may initially be manifested as an illness due to opportunistic infection or as direct viral effects in almost any body system, not including HIV disease in the differential diagnosis may be disastrous. Particularly confusing may be patients who have dementia, which is often due to Alzheimer disease in the general older population but could also be due to HIV. Differences in clinical manifestations may be limited to subtle motor, speech, and cerebrospinal fluid findings, and both Alzheimer dementia and HIV dementia are, to a large degree, diagnoses of exclusion. However, the cornerstone of treatment of HIV dementia is treatment of the underlying HIV infection. Evidence indicates that such treatment not only may prevent the onset or progression of clinical dementia related to HIV disease but also may reverse the dementia to a significant degree. Thus, failing to diagnose HIV dementia could deny patients the opportunity to have the appropriate HAART, with significant consequences for their well-being and quality of life.

Pulmonary disease may be another area offering great opportunity for misdiagnosis. If a healthcare provider knows that a patient has HIV infection, *Pneumocystis carinii* pneumonia (PCP) or atypical manifestations of tuberculosis are very high in the differential diagnosis. Although patients with PCP have somewhat typical findings of diffuse interstitial infiltrates, hypoxia that worsens with exercise, and elevated serum levels of lactic acid dehydrogenase, the clinical manifestations can be subtle or atypical. If the diagnosis of PCP is highly suspected, empirical treatment can be started while awaiting definitive results from sputum tests or bronchoscopy. Patients with HIV disease who have pulmonary tuberculosis may not have the typical radiographic or skin test findings of tuberculosis, factors that raise the index of suspicion for pulmonary tuberculosis in patients with HIV infection that is generally not otherwise warranted. In patients assumed to be seronegative for HIV, however, an entirely different set of pathogenic processes and related clinical pictures comes to mind.

Although the correct diagnosis may ultimately be made, delay in diagnosis can result in significant morbidity or even mortality if PCP goes untreated. In patients with tuberculosis, adverse effects for both the inappropriately treated patients and the unnecessarily exposed contacts can be sequelae of delayed diagnosis and treatment.

Renal disease is another illness that is more frequent in both the elderly and patients with HIV infection than in other patients. Again, if HIV disease is not considered in the differential diagnosis, HIV-associated nephropathy could be missed. And recent experience indicates that HIV-associated nephropathy can at times be improved with HAART.

Thus, falsely assuming that older patients do not have HIV disease can have serious adverse outcomes for the patients and for staff. In situations in which a patient’s HIV status is not known and the illness has not or cannot be definitively diagnosed, astute nurse clinicians must ask the question, Is this a case in which HIV disease can be realistically ruled out? If the answer is no, appropriate risk assessment and diagnostic workup can have a major effect on the patient’s clinical course. Critical care nurses are in a prime position to ensure that HIV disease is not prematurely ruled out in the workup of critically ill elderly patients. And in patients with HIV disease, critical care nurses can effectively counsel and teach about appropriate treatment and management of adverse effects.

Mr Jones’ social history is discussed in a team conference that afternoon, with attention paid to his apparent HIV risk because of sexual contacts and possible use of injection drugs. The pulmonologist deems that Mr Jones is well enough to tolerate fiberoptic bronchoscopy. When Mr Jones has recovered from the procedure, his capacity to make decisions is verified, consent is obtained from him, and HIV antibody testing is performed. Helper T cell counts and viral load testing are also done.

The results of the bronchoscopy indicate that Mr Jones has PCP. Treatment with intravenous trimethoprim sulfamethoxazole 4 mg/kg every 6 hours is immediately begun. Intravenous steroids are also given. After an initial worsening, the fever subsides, and the hypoxia gradually improves.
 indirect effects of HIV infection and its treatments can also affect potentially any organ system.

- Polypharmacy and resulting complications. Polypharmacy is a well-documented problem in the elderly; patients with HIV disease are also commonly prescribed a variety of medications for the HIV infection, treatment and prevention of opportunistic infections, and adverse effects of medications. Opportunities for drug-drug interactions are numerous in both populations.

Although the etiologies of these problems may vary, skills developed in working with a given issue in elderly patients may translate well to working with patients with HIV disease because many of the issues faced by both populations are remarkably similar. These issues include the following:

- Facing morbidity and mortality. Older patients reasonably face morbidity and mortality as a developmental task; patients with HIV disease may face this issue in an accelerated fashion.

- Social isolation. Older patients may experience a loss of loved ones and a decreased ability and opportunity to engage with the world; many patients with HIV disease face some of the same challenges as well as the social stigma of the disease.

- Loss and grieving. Both the elderly and patients with HIV disease often experience loss of loved ones, status, and functioning.

- Decline in physical function. Older patients experience a decline in physical function to some degree as a consequence of aging; patients with HIV disease may face it because of both chronic illness and adverse effects, such as neuropathy and anemia, of drugs to fight the HIV infection.

- Pathological changes in multiple organ systems. Aging can affect a wide variety of organ systems; direct and indirect effects of HIV infection and its treatments can also affect potentially any organ system.

As Mr Jones is weaned from mechanical ventilation, you have a chance to discuss his condition with him more fully. His signs of dementia have cleared somewhat with the resolution of hypoxia and fever. The results of the HIV antibody testing are positive for the virus, the initial helper T cell count is $67 \times 10^6/L$ (67/µL), and the HIV viral load is 42 000/mL. Mr Jones has been told that on the basis of these data and the diagnosis of PCP, he is classified as having AIDS. He finds all this information very confusing, but he has heard of AIDS and is very bothered by this diagnosis, but not really surprised.

He confides to you that he has suffered a lot of personal losses over the years, but he never thought he would face a diagnosis like this one. He feels ashamed and isolated. He is also unclear about what all the numbers mean.

You counsel Mr Jones to wait until the tests for helper T cells and viral load are repeated, because the tests can be inaccurate in patients with an acute infection such as PCP. However, you confirm that indeed his diagnosis is AIDS and begin to discuss with him in simple terms what this diagnosis means and what resources are available to him to help him cope with it. Because of his dementia, you keep your message simple, check for comprehension, and reinforce the teaching on multiple occasions while allowing him an opportunity to vent his feelings.

Mr Jones says to you the next day that he has been thinking about it and that unlike his nephew, he has had a full life and is glad of that. You review with him some of the other hardships he has faced in his life, and he says, “If I could get through those things, I can sure get through this.”

Acquisition of new skills and knowledge may facilitate the care not only of patients with HIV infection but also of other elderly and critically ill patients.
Critical care nurses have traditionally cared both for older patients and for patients acutely ill with HIV disease. Recognizing that HIV disease may affect older patients may require challenging assumptions about both groups of patients. Older persons do get HIV disease and may not look like the stereotypical image of a patient with HIV infection. Intelligent application of this knowledge may allow nurses to intervene at times in ways that reduce morbidity and even save lives.

Critical care nurses who can realistically inventory their skills and abilities may find themselves rich in talents that can help patients with HIV disease. Acquisition of new skills and knowledge may facilitate the care not only of patients with HIV infection but also of other elderly and critically ill patients.

Mr Jones is referred to a licensed clinical social worker for counseling. He is also started on HAART with a combination that includes zidovudine because it crosses the blood-brain barrier and is efficacious in HIV dementia.

Six months later, his daughter comes to the unit to thank the staff for caring for her father. The nurses barely recognize Mr Jones. With HAART, he has gained 13.5 kg (30 lb), and his dementia has cleared. Mr Jones has probably been saved another admission to the intensive care unit and is happy to be able to be a part of his grandchildren’s lives.

Conclusion

Critical care nurses may be caring for elderly patients with HIV disease whether the nurses know it or not. HIV disease remains a significant issue for the elderly even with the decline in transfusion-related infections. Astute healthcare providers will be careful to include HIV in the differential diagnosis of many critical illnesses in elderly patients. Critical care nurses may already have a multitude of skills that can make them excellent care providers for patients with HIV disease. The acquisition of other skills needed to care for patients with HIV disease may make nurses more effective caregivers for all older clients.

References

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Objectives:
1. Identify issues related to the care of older patients with HIV disease
2. Describe the impact of aging on HIV disease diagnosis and treatment
3. Discuss the role of the critical care nurse in the care of older patients with HIV disease

Mark your answers clearly in the appropriate box. There is only 1 correct answer. You may photocopy this form.

1. a 2. a 3. a 4. a 5. a 6. a 7. a 8. a 9. a 10. a
   b b b b b b b b
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Contact hours: 2.0
Passing score: 7 correct (70%)
Category: A
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1. Patients aged 50 or older accounted for what percent of cases during the AIDS epidemic in the early 1980s?
   a. 1%
   b. 5%
   c. 10%
   d. 20%

2. Transfusions-related AIDS accounted for what percent of cases in patients aged 70 years or older?
   a. 11%
   b. 27%
   c. 55%
   d. 64%

3. What percent of adults with AIDS are estimated to be more than 50 years of age?
   a. 8%
   b. 11%
   c. 25%
   d. 20%

4. Which of the following is considered a primary risk factor for AIDS in adults age 50 and older?
   a. Blood transfusions
   b. Use of injection drugs
   c. Heterosexual contact
   d. Autologous donor products

5. In persons aged 50 and older who have at least 1 HIV risk factor, what is the estimated number who are likely to have been tested for HIV?
   a. One half
   b. One third
   c. One fourth
   d. One fifth

6. Which one of the following illnesses is more frequent in both the elderly and patients with HIV infection than in other patients?
   a. Liver disease
   b. Renal disease
   c. Anemia
   d. Diabetes

7. What percent of patients are unwilling to answer questions about their sexual behavior?
   a. 10%
   b. 20%
   c. 30%
   d. 40%

8. Differences in the clinical manifestations of Alzheimer dementia and HIV dementia in older patients is limited to all of the following except which finding?
   a. Motor changes
   b. Degree of memory impairment
   c. Speech changes
   d. Cerebrospinal fluid

9. Patients with *Pneumocystis carinii* pneumonia commonly do not display which of the following atypical manifestations?
   a. Diffuse interstitial infiltrates
   b. Hypoxia that worsens with exercise
   c. Persistent hypercarbia
   d. Elevated serum levels of lactic acid dehydrogenase

10. Which of the following is not considered an issue affecting older patients and patients with HIV infection?
    a. Social isolation
    b. Decline in physical function
    c. Polypharmacy
    d. Opportunistic infections
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