Study Confirms Immune Response to HIV Treatment Is Poorer in Older People

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While age doesn't appear to affect a person's likelihood of controlling HIV after starting antiretroviral (ARV) therapy, older people are less likely to see a significant CD4 cell recovery. These data, from the largest study of its kind conducted so far, were published online September 8 in *AIDS*.

The population of older people with HIV is growing rapidly. Experts believe that more than half of HIV-positive Americans will be older than 50 by 2015, up from 25 percent in 2006. What's more, a significant proportion of people now test positive over the age of 50. A key question, therefore, is whether age influences a person's response to ARV therapy.

While some studies have found that older people are more able than younger people to control HIV while on ARVs, other studies have not found this to be true. Likewise, some studies indicate that older people have poorer immune recovery after starting ARVs—a finding that is consistent with beliefs about the negative impact of age on the immune system. Not all studies have shown this, however, and few studies exploring this matter have had large numbers of older people from which to draw these conclusions.

To explore this topic more definitively, Keri Althoff, PhD, MPH, from Johns Hopkins University in Baltimore and her colleagues examined the medical records of 12,196 people with HIV enrolled in the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD) study. Of these, nearly 21 percent were 50 or older.

Althoff and her colleagues measured three variables after participants started ARVs: whether they achieved and maintained a viral load of less than 500 copies, how long it took them to achieve a 100 CD4 cell increase, and whether their regimen affected their treatment responses. The team limited its analysis to people who started treatment between January 1998 and December 2008 with either a Norvir (ritonavir)–boosted protease inhibitor (PI) or a non-nucleoside reverse transcriptase inhibitor (NNRTI).

In total, 29 percent started treatment with a Norvir-boosted PI, and 81 percent started on an NNRTI. Average CD4s and viral loads, at the start of the analysis, were similar across the age

groups. Most people started with a CD4 count below 250 and a viral load less than 100,000. About 15 percent had an earlier AIDS diagnosis.

Changes in treatment were common. Only half stayed on their initial regimen over 24 months. Of those who changed treatment, 25 percent changed the class of treatment (for example, from a PI-based regimen to an NNRTI-based regimen), and 25 percent went off treatment altogether. There were more treatment switches among people who started with a Norvir-boosted PI than in people who started with an NNRTI.

Althoff's team found that age didn't affect a person's virological response to treatment, but their treatment regimen did—people who took a boosted PI were 21 percent less likely to achieve or maintain an undetectable viral load than people taking an NNRTI.

Conversely, while there was no difference by drug-class when it came to improvements in CD4 counts, age mattered a great deal. Those between the ages of 30 to 49 were between 10 and 15 percent less likely to see significant CD4 gains than people younger than 30. People 60 and older were 26 percent less likely to have such CD4 cell gains.

The authors comment that poorer immune responses in older people are likely explained by two key factors. First, older people generally have a harder time regenerating CD4 cells after a significant blow to the immune system. Second, older people tend to have much more immune inflammation than younger people. In HIV, inflammation has been implicated in poorer immune responses as well as a host of other health complications.

"Although future studies will need to evaluate the impact of toxicity and non-AIDS-related comorbidities on virologic and immunologic outcomes, our data do not currently support the use of specific HAART regimens for specific age groups," the authors concluded. "However, given the impact of CD4 cell count on long-term survival, initiating HAART at higher CD4 cell counts for older individuals may be useful given the decreased likelihood of a robust CD4 cell response with increasing age."
