Schizophrenia: A disorder of neurodevelopment and accelerated aging?

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Many lines of evidence indicate that schizophrenia is a disorder of neurodevelopment. For example, genes implicated in the heritable risk for schizophrenia are also implicated in the development of nerve cells and their connections. Numerous findings in brain imaging studies describe the changes in brain structure and function associated with schizophrenia as emerging early in the course of the disorder. Some early brain imaging studies even found little or no evidence of progression of structural deficits.

Yet, a new generation of studies now also describes degenerative processes in schizophrenia that resemble accelerated aging. Schizophrenia is associated with an increased risk of cardiovascular illnesses and persons with schizophrenia have shorter average lifespans. Studies have also found that individuals with schizophrenia have shortened telomeres, a marker of aging. Structural imaging studies describe enhanced reductions in gray and white matter volumes and increased cortical thinning with age associated with schizophrenia. Similar findings have also emerged for individuals diagnosed with major depressive disorder.

This evidence led researchers of a new study in Biological Psychiatry to specifically examine age-related decline in cerebral white matter in schizophrenia and major depressive disorder, using a measure of microstructural integrity called fractional anisotropy. For comparison, they recruited two normal control groups, one for each cohort.

Dr. Peter Kochunov, first author of the study, explained their findings: "This study showed that the brain's white matter, or the wiring of the brain, ages faster in patients with schizophrenia compared with people who do not have a mental illness. In comparison, the white matter in people with major depression ages similarly to people without a mental illness."

"We are getting a clear picture that a component of the biology of schizophrenia progresses with age. However, I am afraid that we have relatively little understanding of how or why this progression occurs. Thus, it seems that we are at the beginning of exploring a new dimension of the illness that may hold clues to preventing functional decline associated with schizophrenia," commented Dr. John Krystal, Editor of Biological Psychiatry.

Kochunov agrees, adding that they already have additional work planned. "Our next step is to find the cause of this disease-specific effect on accelerated aging by schizophrenia and determine whether it relates to the cause or the consequence of schizophrenia."

More information: "Testing the Hypothesis of Accelerated Cerebral White Matter Aging in Schizophrenia and Major Depression" by Peter Kochunov, David C. Glahn, Laura M. Rowland, Rene L. Olvera, Anderson Winkler, Yi-Hong Yang, Hemalatha Sampath, Will T. Carpenter, Ravindranath Duggirala, Joanne Curran, John Blangero, and L. Elliot Hong (doi: 10.1016/j.biopsych.2012.10.002). The article appears in *Biological Psychiatry*, Volume 73, Issue 5 (March 1, 2013)

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