

## World's oldest woman had normal brain

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A 115-year-old woman who remained mentally alert throughout her life had an essentially normal brain, with little or no evidence of Alzheimer's disease, according to a study in the August issue of *Neurobiology of Aging*.

The findings question the assumption that Alzheimer's disease or other forms of dementia will inevitably develop, if people live long enough. "Our observations suggest that, in contrast to general belief, the limits of human cognitive function may extend far beyond the range that is currently enjoyed by most individuals, and that improvements in preventing brain disorders of aging may yield substantial long-term benefits," according to a study led by Prof. dr. Gert Holstege of University Medical Centre Groningen, The Netherlands.

Dr. Holstege and colleagues had a unique chance to test the mental functioning of one of the world's oldest humans, and then to compare their findings with the condition of the subject's brain after death. The patient was a Dutch woman who, at age 82, made arrangements to donate her body to science after death. At age 111, she contacted the researchers to ask whether her body would still be useful for research or teaching purposes. They assured her that, contrary to what she thought, they were especially interested because of her age: "She was very enthusiastic about her being important for science," Dr. Gert Holstege and colleagues write.

The researchers found the patient to be "an alert and assertive lady, full of interest in the world around her, including national and international

politics and sports." She had lived independently until moving to a residential care home at age 105, mainly because of poor eyesight. Ironically, she had been very small at birth and was not expected to survive.

A series of neurological and psychological examinations were performed when the patient was 112 and 113 years old. The results were essentially normal, with no signs of dementia or problems with memory or attention. In general, her mental performance was above average for adults aged 60 to 75.

As planned, her body was donated to science when she died at age 115. At the time, she was the world's oldest woman. Examination after death found almost no evidence of atherosclerosis (narrowing of the arteries) anywhere in her body. The brain also showed very few abnormalities—the number of brain cells was similar to that expected in healthy people between 60 and 80 years old.

A key finding was the absence of brain abnormalities typical of Alzheimer's disease. There were almost no deposits of a substance called beta-amyloid, which are characteristic of Alzheimer's patients. The other abnormalities present, including "neurofibrillary tangles," were very mild—too early to cause significant mental impairment.

The unique case lends new insights into the potential for preserving brain function in very elderly patients. Previous studies have found at least mild abnormalities in the brains of nearly all "cognitively normal" elderly people. As the number of people living to age 100 and beyond continues to increase, the findings suggest that deterioration of the brain is not inevitable.

Source: Elsevier

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