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Your Brain On Obesity: Overweight People Are '10 Years Older'

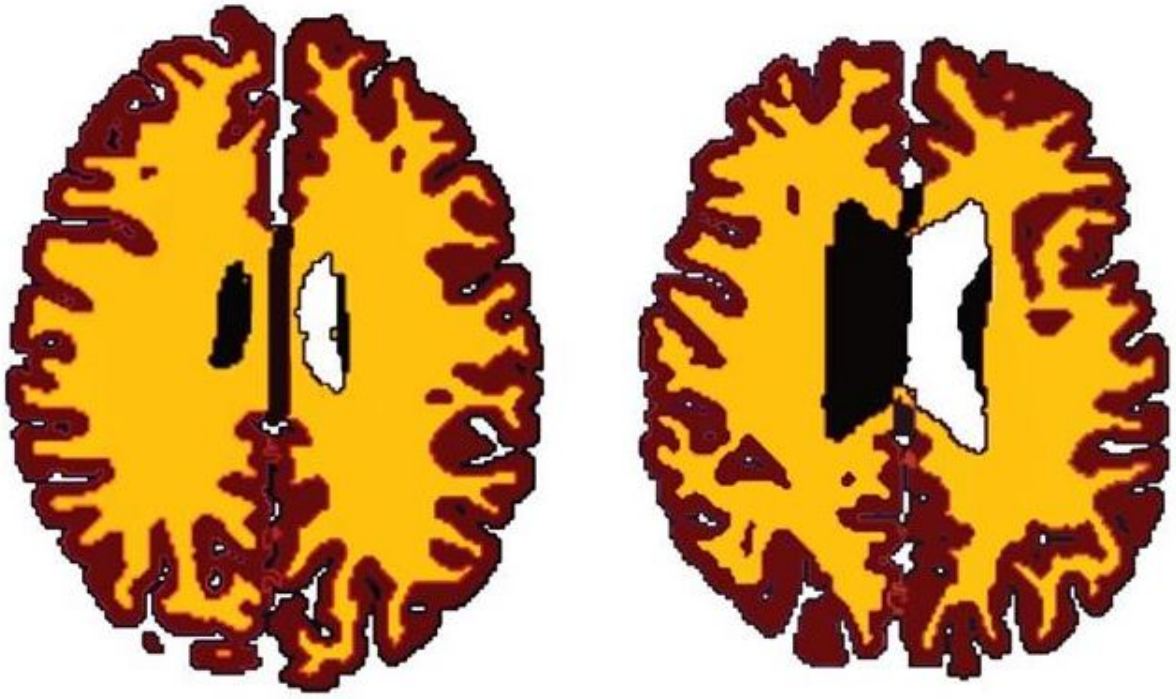
By ACSH Staff — August 4, 2016

Starting in middle age, the brains of obese people show startling differences in white compared to those of normal weight, according to an analysis of fMRI images [1].

White matter tissue connects regions of the brain and allows for information to be communicated between those regions.

To draw their conclusion, scientists looked at data from 473 individuals between the ages of 20 and 87 who were recruited by the Cambridge Centre for Aging and Neuroscience. It's a cross-sectional study (it looked at data from individuals at one point in time) so it can't be conclusive, but they wanted an idea of how obesity impacts brain structure across the adult lifespan and to infer if obesity caused greater brain changes characteristic of aging. Brains naturally shrink with age.

They created two broad categories: lean and overweight. Overweight people showed differences, a widespread reduction, in brain matter structure compared with those of their leaner counterparts. They then calculated how white matter volume related to age across the two groups. An overweight person at 50 years old had a comparable white matter volume to a lean person aged 60 years, implying a difference in brain age of 10 years.



Comparison of grey matter (brown) and white matter (yellow) in sex-matched subjects A (56 years, BMI 19.5) and B (50 years, BMI 43.4). Credit: Lisa Ronan

A potential confounder is that they only observed these differences from middle-age onwards, which sounds unlikely to be credible. They suggest our brains may be particularly vulnerable during this period of aging. If so, you can be fat until your late 40s, which means there is a special biological mechanism happening then - unlikely.

The differences in white matter volume weren't manifested in an individual's cognitive abilities, as measured using a standard test similar to an IQ test.

Citation: Ronan, L et al. Obesity associated with increased brain-age from mid-life. Neurobiology of Aging; e-pub 27 July 2016; DOI: 10.1016/j.neurobiolaging.2016.07.010 [1]

Links

[1] http://www.neurobiologyofaging.org/article/S0197-4580%2816%2930140-3/fulltext