

Increase in visceral fat during menopause linked with testosterone

August 20 2009

In middle-aged women, visceral fat, more commonly called belly fat, is known to be a significant risk factor for cardiovascular disease, but what causes visceral fat to accumulate?

The culprit is likely not age, as is commonly believed, but the change in hormone balance that occurs during the menopause transition, according to researchers at Rush University Medical Center.

"Of all the factors we analyzed that could possibly account for the increase in [visceral fat](#) during this period in a woman's lifetime, levels of active testosterone proved to be the one most closely linked with abdominal fat," said Imke Janssen, PhD, assistant professor of preventive medicine and the study's lead investigator.

The study, which has been published early online in the medical journal *Obesity*, included 359 women in menopausal transition, ages 42 to 60, about half black and half white. Fat in the abdominal cavity was measured with CT scans, a more precise measurement than waist size. Blood tests were used to assess levels of testosterone and estradiol (the main form of estrogen). Medical histories covered other health factors possibly linked with an increase in visceral fat.

Statistical analyses showed that the level of "bioavailable" testosterone, or testosterone that is active in the body, was the strongest predictor of visceral fat.

A woman's age did not correlate significantly with the amount of visceral fat. Nor did race or other cardiovascular risk factors.

The level of estradiol also bore little relationship to the amount of visceral fat.

Visceral fat, surrounding internal organs around the waistline, is metabolically different from subcutaneous fat, which is fat located beneath the skin. Research has shown that visceral fat is a source of inflammation that contributes to premature [atherosclerosis](#) and risk of [acute coronary syndrome](#).

The study's findings extend earlier research conducted by Janssen on testosterone's link with what is called the [metabolic syndrome](#) during the menopausal transition, published in the *Archives of Internal Medicine* in 2008. That study, examining women six years before and six years after their final menstrual period, found that the rise in metabolic syndrome - a collection of risk factors for heart disease - corresponded with the rise in testosterone activity.

"For many years, it was thought that estrogen protected premenopausal women against [cardiovascular disease](#) and that the increased cardiovascular risk after [menopause](#) was related only to the loss of estrogen's protective effect," said Janssen. "But our studies suggest that in women, it is the change in the hormonal balance - specifically, the increase in active testosterone - that is predominantly responsible for visceral fat, and for the increased risk of cardiovascular disease."

Source: Rush University Medical Center ([news](#) : [web](#))

Citation: Increase in visceral fat during menopause linked with testosterone (2009, August 20)

retrieved 4 May 2024 from

<https://medicalxpress.com/news/2009-08-visceral-fat-menopause-linked-testosterone.html>

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