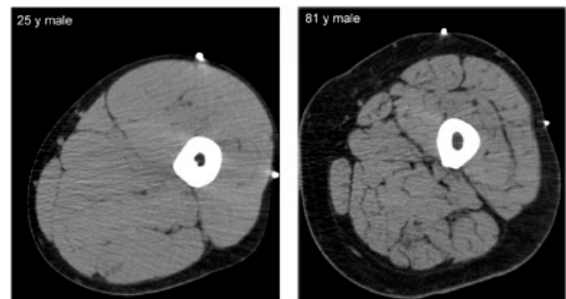




November 19, 2015 – Grand Rapids, MI

The Cause of Obesity: Muscle Aging

In the previous message, I said that there was one factor besides calorie intake that affected the rate of obesity in the United States. Because a picture is worth a thousand words, just take a look at the CT scans at right (1). These are scans of the thighs of a 25-year-old man and an 81-year-old man, matched for body weight and height. There are a couple of things that you can notice. The white area is the muscle and the dark area is mostly fat; the older man's thigh has visibly less muscle mass. In addition, there are more gaps filled with fat inside the muscle of the older man; in steak, we call that marbling.



That's not all that's happening. The increased fat content within the muscles increases local inflammation, and the inflammation and excess fat together make the fat toxic to the muscles. The fat also affects the ability of the muscles to receive neural signals, which in turn affects the ability to contract. There are also fewer blood vessels feeding the muscles, thus limiting the muscles' ability to get waste products out. This causes other changes within the muscle cells that are complex, but suffice it to say that they further limit the muscles' ability to make energy and produce hormones; the net effect is that metabolism decreases. Simply put, you don't burn as many calories and that contributes to weight gain.

Muscle aging begins around the age of 50, so we would expect such a decline in an 81-year-old, right? In the sedentary society we live in, it may begin even earlier than 50. Are we doomed? Are the effects of muscle aging inevitable? I'll cover that in Saturday's message.

What are you prepared to do today?

Dr. Chet

Reference: J App Phys .2009; 106(6): 2040-2048 DOI: 10.1152/jappphysiol.91551.2008.

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