Study shows answers for treating obesity-related diseases may reside in fat tissue

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Researchers at Boston University School of Medicine (BUSM) and Boston Medical Center (BMC) have shown that the quality – not just the quantity – of adipose, or fat, tissue is a significant contributing factor in the development of inflammation and vascular disease in obese individuals. The study, which is a special feature on the iPAD version of the *Journal of the American College of Cardiology,* provides compelling evidence that the answer to treating cardiovascular disease and other obesity-related disorders, such as type 2 diabetes and cancer, might be found in the adipose tissue itself.

While obesity is a leading preventable cause of death in the United States, its prevalence continues to increase rapidly among individuals of all ethnicities and age groups. According to the National Institutes of Health, more than 33 percent of men and women above the age of 20 in the United States are obese and 68% are overweight.

Led by Noyan Gokce, MD, a cardiologist at BMC and an associate professor of medicine at BUSM, the researchers examined adipose tissue samples from both lean and obese individuals. The study subjects, all of whom were receiving care at BMC, included 109 obese men and women and 17 lean men and women between the ages of 21 and 55.

After obtaining the samples, the tissue was biopsied and evaluated for the amount of inflammation present in the tissue. They then performed a vascular ultrasound on the forearm artery to examine blood vessel function. After compiling the information, the researchers saw that lean

individuals exhibited no adipose inflammation and normal vascular function whereas the obese individuals exhibited significant inflammation and poor vascular function.

While these study findings are consistent with other epidemiological obesity studies, this research team identified that 30 percent of the obese subjects demonstrated reduced fat inflammation, less insulin resistance, and their vascular function was similar to a lean person despite severe obesity. The study suggests that humans prone to inflammation in association with weight gain may be more susceptible to cardiovascular and metabolic disease risks.

"While it is widely believed that obesity and inflammation are linked to cardiovascular disease, this study shows not all obese individuals exhibit inflammation that can lead to cardiovascular disease, type 2 diabetes and cancer," said Gokce, the study's senior author. "Once we identify what harmful products adipose tissue is producing that is linked to causing systemic inflammation, we can explore treatments against it that could potentially combat the development of several debilitating obesity-related disorders."

Provided by Boston University Medical Center