Society for Endocrinology – Media Release

Embargoed until 00.01am, Tuesday 1st May 2007

Simple test predicts people with 'hidden' fat who might be susceptible to heart disease

A simple and reliable test can predict whether normal weight people have an increased risk of developing heart disease. The test measures how efficiently the heart pumps blood round the body by assessing the movement of the artery walls. The more elastic your artery walls are, the better your circulation will be. Research, published in the latest edition of *Clinical Endocrinology*, shows that people with more fat surrounding their organs have inefficient blood flow round their bodies, even if they are a normal weight, and therefore are more likely to suffer from heart disease in the future.

There are two types of fat in the body: ordinary fat that occurs just under the skin and visceral fat, which is packed between the body's organs. People can have too much visceral fat but still be a normal body weight. Researchers, led by Prof. Duk-Chul Lee, at Yonsei University in Korea tested 150 women, all of whom led healthy lifestyles. They first scanned the women to measure their visceral fat levels. They then gave the women a simple, non-invasive test (called a brachial-ankle pulse wave velocity test) that assesses how efficiently the heart pumps blood round the body by placing recording devices on the ankle and arm of the patient. People with inefficient blood flow are more likely to contract heart disease later in life. Normal weight women with high visceral fat levels scored 11% higher on the test than women who were overweight with normal visceral fat levels. This means that the normal weight women with lots of visceral fat were more at risk of developing heart disease than those who were overweight but with normal visceral fat levels.

Approximately 40% of people are thought to have too much visceral fat stored round their organs. Previous methods of measuring visceral fat levels and the risk of heart disease have been both expensive and time-consuming. This test could prove a useful early diagnosis tool to predict which individuals are more susceptible to developing heart disease in the future.

Researcher Prof. Duk-Chul Lee says:

"*We have known for a while that too much visceral fat increases your risk of developing heart disease. This simple and reliable test gives us an early-warning system to detect people who might have too much fat around their organs and therefore are at risk of contracting heart disease later in life. The test measures how efficiently the heart pumps blood around the body. We found that people with more visceral fat, regardless of whether they were overweight or not, showed poorer blood flow around their bodies. This means they are more likely to suffer from heart disease at a later date.*

While having lots of fat around your organs is bad for your health, people can easily reduce their visceral fat levels by taking regular exercise. It is essential that people realise the importance of maintaining a healthy lifestyle as well as a healthy body weight."

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Notes for editors:

This paper appears in the April edition of *Clinical Endocrinology* 66 (4), 572-578.

Please mention *Clinical Endocrinology* in any story – the official clinical journal of the Society for Endocrinology

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ABSTRACT

Viscerally obese women with normal body weight have greater brachial-ankle pulse wave velocity than nonviscerally obese women with excessive body weight

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Objective To confirm the association of visceral obesity and brachial-ankle pulse wave velocity (baPWV) and to compare metabolic indices and baPWV between individuals who have normal body weight but are viscerally obese and individuals with excessive body weight who are not viscerally obese.
Patients and Measurements We recruited a total of 150 women, aged 22 to 67 years. We assessed body composition, measured by computed tomography (CT), and divided the study population into four groups, based on visceral adipose tissue area (normal, normal body weight but viscerally obese, excessive body weight but not viscerally obese, and excessive body weight and viscerally obese). The baPWV was measured, using a volume plethysmographic instrument.
Results Despite lower levels of total body fat, the women who had a normal body height but were viscerally obese had a higher plasma triglyceride level and baPWV measurement and greater subcutaneous fat area (SFA) and thigh SFA than the women with excessive body weight who were not viscerally obese. After adjustment for age, mean blood pressure (BP), body mass index (BMI), triglyceride levels, fasting insulin levels, and free fatty acid (FFA) levels, baPWV was independently correlated with abdominal visceral fat area, as measured by CT ($P = 0{\cdot}001$).

Conclusions Mean baPWV was higher in women with normal body weight who were viscerally obese than in women who had excessive body weight but were not viscerally obese, and abdominal visceral fat was an independent factor for baPWV. These results suggest that early detection and intervention in viscerally obese individuals, even those within a normal BMI range, could be needed to prevent atherosclerosis and cardiovascular disease (CVD).