Being tall, obese may significantly increase risk of blood clots in deep veins

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Being tall and obese may increase your risk for potentially dangerous blood clots, according to new research in *Arteriosclerosis, Thrombosis and Vascular Biology*: Journal of the American Heart Association.

Obesity is a well-known risk factor for clots in deep veins (usually in the legs) and for pulmonary embolism, a clot in blood vessels of the lungs that can result in sudden death or strain on the heart. Together, the two conditions are called venous thromboembolism (VTE).

Compared with short (5 feet, 7.7 inches or less) and normal-weight men (body mass index

- 5.28 times higher in obese and tall men
- 2.57 times higher in normal-weight and tall men (at least 5 feet, 11.7 inches tall)
- 2.11 times higher in obese and short men

The amount of risk conferred by being both obese and tall was comparable to other known risk factors for VTE, including pregnancy, the use of oral contraceptives, and carrying one gene for an inherited predisposition to clotting called Factor V Leiden.

Compared with short (5 feet, 2.6 inches or less) normal-weight women, the age-adjusted risk of VTE was:

- 2.77 times higher in obese and tall women
- 1.83 times higher in obese and short women
- Not increased in normal-weight and tall women (more than 5 feet, 6 inches)

"We believe that we observed the increased risk in tall and normal-weight men, but not women, because most women do not get sufficiently tall," said Sigrid K. Braekkan, Ph.D., senior study author and a researcher in the Hematological Research Group at the University of Tromsø in Norway. "The risk may be present in very tall women, but there were too few to investigate this properly."

Researchers said more studies are needed to determine the mechanisms of the association between tall stature, excess weight and the combination on the risk of VTEs.

"In tall people the blood must be pumped a longer distance by the calf-muscle pump, which may cause reduced flow in the legs and thereby raise the risk of clotting," Braekkan said.

"Understanding and preventing VTE is important because even the first occurrence may be fatal. Obesity, in combination with other VTE risk factors, has been shown to substantially increase the risk, so we wanted to assess the combined effects of tall stature and obesity."

The research team analyzed data from the Tromsø study, which conducts periodic health surveys of adults 25-97 years old in the Norwegian town. Researchers collected height and obesity measures on 26,714 men and women followed a median of 12.5 years between 1994 and 2007.

During that time, 461 VTEs occurred.

Obesity causes increased pressure in the abdomen, which may reduce the ability of the calf-muscle pump to return the blood from the legs. "Obesity is also linked to a state of constant low-grade inflammation, and inflammation may render blood more susceptible to clotting," Braekkan said.

Physicians should consider people's height and weight as they assess their overall risk for dangerous clots, researchers said.

"Since body height is not easy to modify, the most important thing is to stay slim, especially if you are tall," Braekkan said.

The researchers previously found a strikingly similar rise in clot risk along with height in American men, and believe that the height cut-offs would apply to Caucasian populations in other regions.

In the United States, more than 275,000 people each year are hospitalized with deep vein clots or pulmonary embolism, according to the American Heart Association.

Provided by American Heart Association