Vitamin D deficiency increases risk of heart disease

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New research from the University of Copenhagen and Copenhagen University Hospital shows that low levels of vitamin D are associated with a markedly higher risk of heart attack and early death. The study involved more than 10,000 Danes and has been published in the well-reputed American journal *Arteriosclerosis, Thrombosis and Vascular Biology*.

Vitamin D deficiency has traditionally been linked with poor bone health . However, the results from several population studies indicate that a low level of this important vitamin may also be linked to a higher risk of ischemic heart disease, a designation that covers heart attack, coronary arteriosclerosis and angina. Other studies show that vitamin D deficiency may increase blood pressure, and it is well known that high blood pressure increases the risk of heart attack.

"We have now examined the association between a low level of vitamin D and ischemic heart disease and death in the largest study to date. We observed that low levels of vitamin D compared to optimal levels are linked to 40% higher risk of ischemic heart disease, 64% higher risk of heart attack, 57% higher risk of early death, and to no less than 81% higher risk of death from heart disease," says Dr. Peter Brøndum-Jacobsen, Clinical Biochemical Department, Copenhagen University Hospital.

The scientists have compared the 5% lowest levels of vitamin D (less than 15 nanomol vitamin per litre serum) with the 50% highest levels

(more than 50 nanomol vitamin per litre serum). In Denmark, it is currently recommended to have a vitamin D status of at least 50 nanomol vitamin per litre serum.

The higher risks are visible, even after adjustment for several factors that can influence the level of vitamin D and the risk of disease and death. This is one of the methods scientists use to avoid bias.

Blood samples from more than 10,000 Danes

The population study that forms the basis for this scientific investigation is the Copenhagen City Heart Study, where levels of vitamin D were measured in blood samples from 1981-1983. Participants were then followed in the nationwide Danish registries up to the present.

"With this type of population study, we are unable to say anything definitive about a possible causal relationship. But we can ascertain that there is a strong statistical correlation between a low level of vitamin D and high risk of heart disease and early death. The explanation may be that a low level of vitamin D directly leads to heart disease and death. However, it is also possible that vitamin deficiency is a marker for poor health generally," says Børge Nordestgaard, clinical professor at the Faculty of Health and Medical Sciences, University of Copenhagen and senior physician at Copenhagen University Hospital.

Long-term goal is prevention

The scientists are now working to determine whether the connection between a low level of vitamin D and the risk of heart disease is a genuine causal relationship.

If this is the case, it will potentially have a massive influence on the

health of the world population. Heart disease is the most common cause of adult death in the world according to the World Health Organization (WHO), which estimates that at least 17 million people die every year from heart disease.

"The cheapest and easiest way to get enough vitamin D is to let the sun shine on your skin at regular intervals. There is plenty of evidence that sunshine is good, but it is also important to avoid getting sunburned, which increases the risk of skin cancer. Diet with a good supply of vitamin D is also good, but it has not been proven that vitamin D as a dietary supplement prevents heart disease and death," says Børge Nordestgaard.

Provided by University of Copenhagen