Slightly elevated blood glucose levels increase risk of heart disease

June 11 2012

New research from the University of Copenhagen shows that even slightly higher levels of glucose in the blood noticeably increase the risk of ischemic heart disease. The study involves more than 80,000 people and has just been published in the well-reputed *Journal of the American College of Cardiology*.

It is not only diabetics who risk heart-related problems resulting from lifelong above-average blood glucose levels. New research from the University of Copenhagen shows that even a slightly elevated level of blood glucose in non-diabetic people results in a conspicuously greater risk of ischemic heart disease.

These results surprised the research team behind the study, because until now cholesterol had quite legitimately been declared the paramount threat to global heart health.

"We know that diabetics and people with high cholesterol levels are prone to ischemic heart disease, but our study also made it possible to look at blood glucose level in isolation. It is surprising that even a slightly higher blood glucose value appears to be dangerous over a longer period – and that sugar alone makes a negative difference," says Marianne Benn, chief physician at Copenhagen University Hospital and associate professor at the University of Copenhagen.

Healthy people without diabetes have a normal, fasting blood glucose value of less than 6 mmol (=108 mg) glucose per litre blood. However,

the study published in the Journal of the American College of Cardiology shows that over many years, a blood glucose value of only 1 mmol (=18 mg) per liter above normal increases the risk of heart attack by a surprising 69 per cent.

Sugar in the spotlight

Using observational studies combined with genetic analyses, researchers were able to show in a group of 80,522 Danes drawn from the general population that a slightly elevated level of blood glucose is enough in its own to damage the heart.

Observational studies are not enough to document a correlation between elevated blood glucose and heart disease. Participants in such studies who have elevated blood glucose levels may share characteristics or physical problems that influence heart and weight – in contrast, the genetic analyses used in the present studies strip distracting elements from the analyses from the three large population studies. Sugar gets the full focus.

The three population-based studies that provided the basis for the scientific article are: The Copenhagen General Population Study, The Copenhagen City Heart Study, and The Copenhagen Ischemic Heart Disease Study.

Research can be used for prevention

The scientists believe that glucose impacts the risk of ischemic heart disease directly, but are still unsure why. However, they recommend that the general intake of sugar should be limited for the benefit of health worldwide:

"The World Health Organization estimates that 6 per cent of all deaths are due to elevated blood glucose. Therefore, our results may potentially have great importance for the design of programmes to prevent heart disease and early death worldwide," explains Børge Nordestgaard, chief physician at Copenhagen University Hospital and clinical professor at the Faculty of Health and Medical Sciences, University of Copenhagen.

Heart attacks, atherosclerosis and angina – also known as ischemic heart disease – are the most common cause of death among adults worldwide. According to the World Health Organization, 17 million people die each year from heart-related diseases – a number that is expected to rise in the years ahead.

Provided by University of Copenhagen