

Fatal CHD Risk Soars With Obesity

Based on a new analysis of a large intervention trial, researchers from the University of Glasgow, Scotland, reported that risk of fatal coronary events in men increased significantly with the severity of obesity, and this increase was independent of traditional coronary heart disease (CHD) risk factors (such as hypertension, hypercholesterolaemia, and diabetes). Obesity did not significantly affect the risk of non-fatal coronary events. This suggested that there was a different pathophysiology for fatal and non-fatal events. Thus, treating only conventional risk factors might not be enough to neutralise the risk of CHD in obese men.

The trial, involving more than 6,000 middle-aged men, found that obese men – those with a body mass index (BMI) of 30 or higher – could have as much as a 75% increase in the risk of fatal coronary events compared with normal-weight men, even after adjusting for other risk factors.

The researchers noted that large studies have already shown that CHD mortality increases with the severity of obesity. However, the relationship between obesity and CHD is poorly understood, and that obesity's association with non-fatal CHD has not been rigorously examined. The authors suggested that obesity's differing effects on fatal and non-fatal CHD events might be related to inflammation. They noted that obesity could be considered a low-grade inflammatory state, since fat can release pro-inflammatory cytokines. Studies have shown that inflammatory markers like C-reactive protein (CRP) and interleukin-6, are more closely associated with fatal than non-fatal CHD events.

To evaluate the association between obesity and CHD risk, the researchers analysed data from the West of Scotland Coronary Prevention Study, which examined fatal and non-fatal CHD events in 6,082 men with hypercholesterolaemia, but who were otherwise healthy, over a period of 15 years. The study population was divided into BMI quintiles from 18.5 to 39.9 kg/m².

It was found that the hazard of a CHD event increased from 1.18 (BMI of 27.5-29.9) to 1.29 (BMI 30.0-39.9), when compared with a BMI of 25-27.4. The non-fatal CHD events showed no associations across the increasing BMI categories. The risk of fatal CHD events was increased in BMI category 30-39.9 relative to BMI category 25-27.4, in both the minimally adjusted model (HR=1.75, 95% CI 1.12 to 2.74), and the maximally adjusted model (HR=1.60, 95% CI 1.02 to 2.53), and 60% higher in a fully adjusted model. When CRP was included in the models, the risk of fatal CHD in the highest BMI quintile was not attenuated.

For further analysis, the highest BMI quintile was divided into 30-34.9 and 35-39.9. There was only a weak association with total CHD

events for both these BMI categories, and there was no association with non-fatal CHD events.

However, the risk of fatal CHD doubled from the BMI category 30-34.9 to the 35-39.9 category, in relation to the 25-27.4 category. With adjustment for classical risk factors, the 30-34.9 category showed a non-significant association with fatal CHD, while the 35-39.9 category still showed a three times greater risk versus the 25-27.4 category.

The strength of this analysis was the large study population size and the availability of specific information on the causes of death. The main limitations of the study were:

- 1) the relatively small number of obese men;
- 2) there was no actual measure of the amount of adipose tissue;
- 3) the study population was recruited 20 years ago and came from one deprived area in the UK;
- 4) there was a high prevalence of smoking; and
- 5) the physiological characteristics of adipose tissue in women and other ethnic groups may be different. **SMA**

Source

Logue J, et al. Obesity is associated with fatal coronary heart disease independently of traditional risk factors and deprivation. *Heart* 2011; DOI: 10.1136/hrt.2010.211201.

