

Sex hormones link to heart risk

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Men are more prone to – and likely to die of - heart disease compared with women of a similar age – and sex hormones are to blame, according to a new University of Leicester led study.

The findings of a study by Dr Maciej Tomaszewski, New Blood Lecturer in Cardiovascular Medicine in the Department of Cardiovascular Sciences at the University of Leicester, suggest that this "male disadvantage" may be related to the sex-specific effects of naturally occurring sex hormones.

The research by Dr Tomaszewski and his colleagues, which has been published on line in the journal *Atherosclerosis*, involved 933 men aged, on average, 19 years, from the Young Men Cardiovascular Association study. The researchers looked at ways that the sex hormones - estradiol, estrone, testosterone and androstenedione - interacted with three major risk factors of heart disease (cholesterol, blood pressure and weight).

They found that two of these sex hormones (estradiol and estrone, called together estrogens) are linked to increased levels of bad cholesterol (LDL-cholesterol) and low levels of good cholesterol (HDL-cholesterol) in men.

This suggests that certain sex hormones may be important risk factors of heart disease in men, even before they present symptoms of coronary artery disease or stroke.

Dr Tomaszewski commented: "We hypothesised that circulating

concentrations of sex hormones were associated with cardiovascular disease risk factors in men long before any apparent manifestations of cardiovascular disease such as stroke or myocardial infarction".

"We examined associations of circulating estrogens (estradiol and estrone) as well as androgens (testosterone and androstenedione) with major cardiovascular risk factors (lipids, blood pressure, body mass) in 933 young (median age – 19 years), apparently healthy men.

"Our studies showed that one of the sex hormones - estradiol - was associated positively with total cholesterol and negatively with HDL-cholesterol. Circulating concentrations of another sex hormone - estrone - showed strong positive associations with both total cholesterol and LDL-cholesterol.

"Thus, men with the highest concentrations of estrone and estradiol may have the highest level of cardiovascular risk as their levels of detrimental LDL-cholesterol are high whilst their cardio-protective HDL-cholesterol is low.

"Most importantly, the demonstrated associations between cholesterol and estrogens were independent of other sex hormones (testosterone and androstenedione), age, body weight, blood pressure and other potential confounding factors.

"Our data suggest that higher levels of estrogens may have negative influence on lipid profile in men early in life, before the apparent onset of cardiovascular disease.

"Why natural endogenous estrogens that are generally seen as cardio-protective in women increase cardiovascular risk in men remains to be elucidated. Future prospective studies are needed to confirm that higher levels of endogenous estrogens in youth increase the risk of heart disease

later in man's life.

"A number of other investigations on sex-specific aspects of cardiovascular disease are in progress in our Department and I am sure that we will be able to continue providing information in this area of research in the future."

Source: University of Leicester

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