**Do high ferritin levels confer lower cardiovascular risk in men with Type 2 diabetes?**


**Source**
Endocrinology Department, Cliniques universitaires St-Luc, Université catholique de Louvain, Brussels, Belgium. michel.hermans@diab.ucl.ac.be

**Abstract**

**AIMS:**

High ferritin levels are associated with insulin resistance and liver steatosis, both thought of as emerging cardiovascular risk factors. The association between ferritin and cardiovascular disease is poorly documented in cardiometabolic states with higher cardiovascular risk, such as diabetes and metabolic syndrome. We therefore characterized a cohort of males with Type 2 diabetes mellitus (T2DM) according to ferritin levels and prevalent macroangiopathy.

**METHODS:**

The presence of overall macroangiopathy, peripheral and/or coronary artery disease was documented in 424 consecutive T2DM males, who were divided according to ferritin quartiles (Q) as follows: QI-III, normal ferritin (NF; n=318), mean+/-1 sd ferritin 133+/-72 ng/ml; and QIV patients, high ferritin (HF; n=106), ferritin 480+/-228 ng/ml.

**RESULTS:**

Age, age at diabetes diagnosis, smoking, ethanol intake, body mass index, waist circumference, blood pressure and presence of metabolic syndrome did not differ between groups. However, the prevalence of macroangiopathy was unexpectedly much lower in patients with high ferritin, as follows: 25% vs. 43% for overall macroangiopathy; 7% vs. 16% for peripheral artery disease; and 16% vs. 31% for coronary artery disease (P=0.0009, P=0.0140 and P=0.0035, respectively, vs. NF patients). Insulin resistance index and prevalence of liver steatosis were higher in HF compared with NF patients as follows: 2.17% vs. 1.89% and 78% vs. 64% (P=0.0345 and P=0.0059, respectively). Liver enzymes (aspartate aminotransferase, alanine aminotransferase and gamma-glutamyl transferase) were significantly higher in HF, by
33%, 42% and 72%, respectively (all P<0.0002), suggesting a higher prevalence of steatohepatitis. Glycated haemoglobin, low-density lipoprotein-cholesterol, high-density lipoprotein-cholesterol, triglycerides, urate, high-sensitivity C-reactive protein and albuminuria were not different between groups.

CONCLUSIONS:

Our results demonstrate that T2DM males with high ferritin levels exhibit a markedly decreased prevalence of macroangiopathy, despite more severe insulin resistance and higher markers of steatohepatitis. High ferritin levels and/or steatosis may thus paradoxically confer a lowered cardiovascular risk in diabetic males.

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