

Cardiovascular: Intensive Statin Therapy May Partially Reverse Plaque Build Up In Arteries.

Atherosclerosis is the process in which deposits of fatty substances, cholesterol, cellular waste products, calcium and other substances build up in the inner lining of an artery. This build up is called plaque and can trigger cardiovascular disease. Cardiovascular disease is a killer. For example, preliminary statistics for 2003 (the latest year available) show that cardiovascular disease claimed 910,614 lives in the USA alone which equates to 37.3 % of all deaths.

New research may provide one of the keys to reducing such alarming statistics. On the 13th March 2006 a study was presented to the American College of Cardiology's 55th Annual Scientific Session in which it was demonstrated, for the first time, that a very intensive cholesterol lowering regime with a statin drug could partially reverse the build up of plaque in the arteries.

The study known by the acronym ASTEROID (A Study to Evaluate the Effect of Rosuvastatin on Intravascular Ultrasound Derived Coronary Atheroma Burden Trial) was conducted in 53 community and tertiary care centres across the USA, Canada, Europe and Australia. The study involved the use of intravascular ultrasound (IVUS) as a means of measuring the plaque burden in patients. IVUS requires a tiny ultrasound probe to be inserted into the coronary arteries to measure plaque and, as such, provides a very precise and reproducible method for determining any changes in plaque build up. A total of 507 patients (mean age 58.5 years, 29% female) underwent IVUS examination at baseline. They were then treated with a daily 40 mg dose of rosuvastatin (brand name Crestor) and reassessed by IVUS after 24 months of treatment.

The results were remarkable. Whilst previous studies had shown that intensive statin therapy could prevent the progression of arterial plaque build up, the ASTEROID trial showed regression (partial reversal) of the condition. The mean baseline LDL cholesterol levels of 130.4 mg/dL decreased to 60.8 mg/dL ($p < 0.001$) during the study (a reduction of 53.2 %.), with 75% of patients achieving an LDL < 70 mg/dL. This represented the largest reduction in cholesterol ever observed in a major statin outcome trial. Mean HDL cholesterol increased from 43.1 mg/dL at baseline to 49.0 mg/dL, an increase of 14.7%, which was also unprecedented. Arterial plaque was reduced by 6.8% to 9.1% for the various measures of disease burden.

The research team attributed the regression of plaque build up to the very large reductions in LDL cholesterol

and increases in HDL cholesterol. Lead author of the study Dr Steven Nissen MD FACC of the Cleveland Clinic,

commented that the intensive statin regime "significantly lowered bad cholesterol and surprisingly markedly increased good cholesterol levels". He concluded that "very low LDL (below current guidelines) when accompanied by raised HDL can regress, or partially reverse, the plaque build up in the coronary arteries".

Although the results are exciting, the study itself was not designed to assess whether such an intensive statin therapy regime would actually save lives. Further studies are still needed to confirm whether the regression demonstrated in the trial translates into fewer heart attacks. Safety and economic concerns will also play their part in the future of intensive statin therapy. Rosuvastatin has previously been linked to a small number of cases of a muscle wasting disease and whilst the drug was given a clean bill of health by the US Food and Drug Administration last year, side effects are more likely at higher doses.

It should also be noted that one limitation of the ASTEROID trial was the lack of a control group.

References:-

Nissen SE, et al. Effect of Very High-Intensity Statin Therapy on Regression of Coronary Atherosclerosis. The ASTEROID Trial. JAMA. 2006;295:epub before print.

Press release from the ACC.06 March 2006

BBC News Health Drugs Can Reverse Heart Disease 14.3.06

Statistics from the American Heart Association