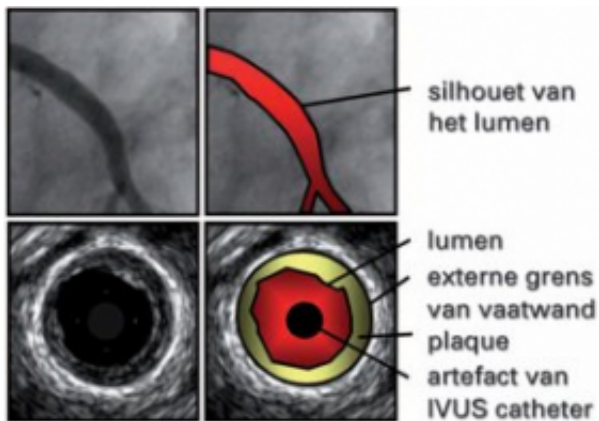


Aggressive lowering of cholesterol has positive impact in atherosclerosis

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Heart catheterization or angiography (above) shows only the ‘lumen’, through which blood can flow normally. It does not show the thickened walls. IVUS (below) can do that however; plaque development can be monitored over a period of time.

There is a direct relationship between thickening of blood vessel walls – atherosclerosis – in the coronary arteries and the cholesterol levels in the blood. This was demonstrated for the first time in research carried out by the University of Twente and Medisch Spectrum Twente (Netherlands). Using intravascular ultrasonics (IVUS), PhD student Marc Hartmann could accurately monitor the increase or decrease in atherosclerosis.

Aggressive cholesterol lowering has a favourable effect when treating

coronary heart disease according to the trainee cardiologist who received his doctorate on 27 November.

IVUS goes a step further than heart catheterization: the ultrasonic technique not only shows the vessels are becoming narrower, but also provides images of the plaque (causing the thickening) and the vascular walls. Thus the technique provides a clearer view of how atherosclerosis is developing.

In his PhD research, trainee cardiologist Marc Hartmann regularly (on average every 18 months) measured plaque formation in the coronary arteries of patients with coronary heart disease. This showed for the first time that there is a clear relationship between the cholesterol levels in the blood and the increase in the amount of plaque. When the LDL cholesterol was low (lower limit 1.9 mmol/liter), plaque growth stopped and even started to decrease. This suggested, according to the researcher, that aggressive lowering of cholesterol using statins – cholesterol-lowering drugs – had a positive effect in coronary heart disease patients. He is not the only one to believe this; other larger studies have arrived at the same result.

The research also showed that there was a clear relationship between plaque growth and the risk of suffering a ‘cardiovascular event’. This has been calculated using validated cardiovascular risk scores. In patients who experienced an event (a heart attack, unstable angina or an angioplasty procedure to treat narrowing of an artery), there was a significant increase in plaque growth.

Hartmann’s research once again emphasizes the value of the multiple IVUS data in predicting and preventing cardiovascular events. This technique will allow the accelerated development of new anti-atherosclerotic therapies in order to reduce deaths due to coronary disease.

Marc Hartmann is a trainee cardiologist at the Thorax Centrum of the Medisch Spectrum Twente (MST) hospital in Enschede. His supervisor is Clemens von Birgelen, professor at the Biomedical Technological Institute, University of Twente and cardiologist at the MST.

Provided by University of Twente, Netherlands

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