HDL cholesterol: atherosclerosis and beyond

Bochem, A.E.

Publication date
2013

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
Cardiovascular event in a 36 year-old man with combined \(ABCAI\) and apoA-I deficiency

Submitted for publication

Andrea E. Bochem\(^1\), John J.P. Kastelein\(^1\), Leo G. Gerhards MD PhD\(^2\), G. Kees Hovingh\(^1\),

\(^1\)Department of Vascular Medicine, Academic Medical Center, Amsterdam, The Netherlands
\(^2\)Department of Cardiology, Martini Hospital, Groningen, the Netherlands
A 36-year-old man was admitted because of acute chest pain. Upon diagnostic procedures, an acute myocardial infarction (AMI) was confirmed and a percutaneous coronary intervention (PCI) was performed with stent placement of a bare metal stent (BMS) in the ramus circumflex. After one week, an elective PCI with BMS placement in the right coronary artery was performed.

The patient reported to smoke. His blood pressure was 133/97 mmHg and BMI was 27.8 kg/m2. No murmurs over peripheral arteries, xanthomas, xanthelasmata or arcus lipoides were observed. Laboratory results were unremarkable except for a near absence of HDL-c (0.09 mmol/L).

The patient has two healthy brothers, with unknown HDL-c levels. His father experienced an AMI at the age of 48. His father’s brother had an AMI at the age of 50 and his father’s sister died from an unknown cause at the age of 50. His mother is 57 years-old and healthy except for diabetes and extremely low HDL-c levels (0.21 mmol/L) (figure C).

Genes involved in HDL-c metabolism were sequenced and both an ATP-binding cassette transporter A1 (ABCA1) mutation (p.Asn1800His;c.5398A>C) and an apolipoprotein AI (apoA-I) mutation (p.Leu202Pro;c.605T>C) (figure D) were identified. ABCA1 is essential for reverse cholesterol transport (RCT) by virtue of its ability to transport cholesterol from macrophages to lipid-poor apoA-I, the major protein constituent of the HDL particle. This combined molecular defect, which has not been described before, is consistent with the observed near absence of HDL-c and is likely to have constituted a substantial risk factor in this patient, since there was no abundance of other cardiovascular risk factors. Since specific HDL-c increasing therapy is not available yet, prevention focuses on modulating other risk factors such as LDL-c lowering.
Left coronary artery: occlusion in ramus circumflex (culprit lesion), no significant lesion in the left anterior descending branch; B. Right coronary artery: significant stenosis in mid portion with pre and post dilatation of the vessel; C. Patient’s pedigree: lipid profiles are in mmol/L, percentiles for age and gender between brackets; D. Mutations in *Apolipoprotein A-I* and *ATP-binding cassette transporter A1*. 

Increased arterial stiffness in *ABCA1* mutation carriers