

## Short- and Long-Term Changes of Flow-Mediated Vasodilation in Patients under Statin Therapy

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### Summary

*Background:* Flow-mediated vasodilation (FMD) of the brachial artery (BA) has been shown to improve in response to lipid-lowering therapy and other therapeutic interventions, usually within 1 to 2 months. Whether FMD remains improved under therapy in the longer term is unknown.

*Hypothesis:* The aim of this study was to examine the short- and long-term changes of FMD under statin therapy.

*Methods:* Flow-mediated vasodilation and nitroglycerin-mediated vasodilation (NMD) of the BA were measured with high-resolution ultrasound (13 MHz) at baseline and at 4 and 10 months in 18 consecutively recruited patients with coronary artery disease (CAD), in whom statin therapy was newly established.

*Results:* The decrease of total plasma cholesterol levels after 4 and 10 months of statin therapy ( $243 \pm 31$  vs.  $186 \pm 30$  vs.  $191 \pm 40$  mg/dl;  $p < 0.001$ ) was accompanied by an increase in FMD from  $4.4 \pm 3.8\%$  at baseline to  $9.6 \pm 2.7\%$  at 4 months and to  $9.5 \pm 2.6\%$  at 10 months ( $p < 0.001$ ). Nitroglycerin-mediated vasodilation showed a trend toward improvement after 4 months ( $14.6 \pm 7.5$  vs.  $19.1 \pm 3.6$  vs.  $19.4 \pm 5.6\%$ ; NS). The FMD/NMD ratio also rose significantly after 4 months and remained improved after 10 months of statin therapy ( $0.31 \pm 0.25$  vs.  $0.52 \pm 0.16$  vs.  $0.50 \pm 0.14$ ;  $p < 0.01$ ).

*Conclusion:* Statin therapy is associated with sustained improvement of endothelial function up to 10 months. These data support the utility of FMD for the assessment of vascular function in response to lipid-lowering therapy or other therapeutic interventions in long-term studies.

**Key words:** flow-mediated vasodilation, statins, brachial artery, ultrasound

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Received: July 5, 2001

Accepted with revision: November 2, 2001