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Usefulness of retinal micro-vascular endothelial dysfunction as a predictor of coronary artery disease

Al-Fiadh A H, Wong T Y, Kawasaki R, Clark D J, Patel S K, Freeman M, Wilson A, Burrell L M and Farouque O
Consultant Interventional Cardiologist at Austin Health, Australia.

Introduction: Endothelial dysfunction is a key feature of atherosclerosis. Retinal micro-vascular endothelial function can be assessed using noninvasive dynamic vessel imaging techniques. Whether it is impaired in subjects with Coronary Artery Disease (CAD) is unknown.

Aim: The aim of this study was to examine the relation of retinal micro-vascular endothelial function with CAD.

Methods: Vascular studies were performed in 197 prospectively recruited subjects divided into 2 groups: Those without CAD but ≥ 2 cardiovascular risk factors (non-CAD controls; $n=119$) and those with stable CAD ($n=78$). Retinal micro-vascular endothelial dysfunction was assessed by measuring retinal arteriolar and venular dilatation to flicker light, a nitric oxide-dependent phenomenon, expressed as percentage increase over baseline diameter. Fingertip pulse-volume amplitude was measured to calculate reactive hyper-aemia index and brachial artery flow-mediated dilatation assessed as measures of peripheral micro-vascular and conduit vessel endothelial function, respectively.

Results: Mean retinal arteriolar dilatation was attenuated in patients with CAD compared with non-CAD controls ($1.51 \pm 1.51\%$ vs. $2.37 \pm 1.95\%$, $p=0.001$). Retinal arteriolar dilatation was independently associated with CAD after adjustment for age, gender, cardiovascular risk factors and medication use (odds ratio 1.60, 95% confidence interval 1.14 to 2.25, $p=0.007$). Reactive hyper-aemia index and flow-mediated dilatation were not different.

Conclusion: The capacity of retinal arterioles to dilate in response to flicker light is an independent predictor of the presence of CAD and suggests that retinal micro-vascular endothelial dysfunction is a marker for underlying CAD.

Biography

Al-Fiadh A H has completed his Graduation from Al-Mustansuriyah University in Iraq, 1991 and qualified as a Cardiologist in Australia in 2008. He was granted research scholarships from National Health and Medical Research Council of Australia and the National Heart Foundation and was awarded Doctor of Philosophy in Medicine from University of Melbourne for his research titled "Measures of Vascular Reactivity and Plasma Biomarkers as Indicators of Coronary Artery Disease with Special Reference to the Retinal Circulation". He undertook Interventional Cardiology training in Melbourne and currently practices as a Consultant Interventional Cardiologist at Austin Health, Melbourne.

alihamdi50@hotmail.com

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