

# Retinal microvascular changes associated with disability in daily activities among older adults

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Retinal microvascular changes appear to be associated with development of disability in performing activities of daily living among older adults, and retinal signs may be useful in predicting outcomes among this population, according to a report published Online First by *Archives of Ophthalmology*.

"We have recently found that a higher burden of retinal signs was associated with poor executive function and physical function in a cross-sectional analysis," the authors write as background information in the article. "Based on this evidence, we hypothesized that retinal signs might predict future disability in performing activities of [daily living](#)."

Using data collected during the Cardiovascular Health Study, a population-based study of community-dwelling older adults, Dae Hyun Kim, M.D., M.P.H., of the Beth Israel Deaconess Medical Center and Harvard School of Public Health, Boston, and colleagues examined the association of retinal microvascular changes with disability to perform activities of daily living. Retinal signs that were measured included generalized arteriolar narrowing, generalized venular widening, retinopathy, arteriovenous nicking, and focal arteriolar narrowing.

At the baseline examination, the overall prevalence of retinal signs was 7.1 percent (92 of 1,294) for retinopathy, 7.5 percent (85 of 1,135) for arteriovenous nicking (constriction of a vein in the [retina](#) at an where it

crosses an artery) and 10.4 percent (111 or 1,063) for focal arteriolar narrowing. Patients with two or more retinal signs comprised 6.9 percent (61 of 880) of the study population with complete retinal data. During a median follow-up of 3.1 years (maximum, 7.8 years) and after adjusting for other factors, the presence of two or more retinal signs was associated with a 1.45-fold increased rate of disability; however, individual retinal signs were not.

Further analysis showed that the presence of two or more retinal signs was associated with disability compared with having no signs, while having one retinal sign was not. The authors found no particular combinations of retinal signs that showed greater risk than others. Additionally, the association was independent of vascular risk factors and carotid atherosclerosis, and among those without diabetes or clinical cardiovascular disease.

"Our study supports the hypothesis that microvascular disease accelerates age-related disability and retinal signs can be useful in understanding mechanisms and predicting outcomes," the authors conclude. They also note that, "our study suggests that the presence of two or more retinal signs may be an early marker of microvascular disease that portends an elevated risk for future activities of daily living disability in community-dwelling [older adults](#) independently of major risk factors for disability and microvascular disease on brain MRI."

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