

# Is Diabetic Retinopathy an Independent Risk Factor For Ischemic Stroke?

Diabetic retinopathy may help predict people who could require a more comprehensive assessment of their stroke risk.

REVIEWED BY TIEN Y. WONG, MD, PhD

**D**iabetic retinopathy appears to predict incident ischemic stroke in people with diabetes, independent of other risk factors. According to a report in *Stroke*, the relationship between diabetic retinopathy and ischemic stroke is uncertain. Therefore investigators from the University of Melbourne in Australia undertook a study to examine the link. “Diabetes can exert its effects on multiple organs in the body,” said author Tien Y. Wong, MD, PhD, in an interview with Reuters Health. “Damage in the eye is a marker of probably unseen damage occurring elsewhere. Blood vessel damage in the eye is linked to blood vessel damage in the brain, heralding the onset of stroke.” Dr. Wong is Professor of

Ophthalmology and Deputy Director of the Centre for Eye Research Australia at the University of Melbourne.

In a population-based, prospective cohort study of 1,617 middle-aged people with diabetes, Dr. Wong and colleagues ascertained evidence of diabetic retinopathy signs from retinal photographs. Incident ischemic stroke events were prospectively identified and validated, according to the report.

During an average follow-up of almost 8 years, the investigators reported 75 ischemic stroke events. After adjustment for the following stroke risk factors: age, gender, race, center, 6-year mean arterial blood pressure, antihypertensive treatment use, fasting glucose, insulin treatment, duration of diabetes, HDL and LDL

## RVO LINKED TO DOUBLING OF CARDIOVASCULAR MORTALITY IN YOUNGER PATIENTS

Retinal vein occlusion (RVO) in patients aged 43 years to 69 years may mean a doubling of their risk of cardiovascular disease, according to a report in *Ophthalmology*.

Jie Jin Wang, MMed, PhD, from the Centre for Vision Research, Department of Ophthalmology, Westmead Millennium Institute at the University of Sydney, and colleagues, assessed the association of RVO and cardiovascular and cerebrovascular mortality using pooled data from two population-based cohort studies. The studies—Beaver Dam Eye Study and the Blue Mountains Eye Study—included data from 8,384 patients; RVO was assessed from retinal photographs, and the rates of vascular mortality were determined from death certificates, according to the report.

At baseline, 96 patients or 1.1% had RVO; of this group, 71 had branch RVO, according to Dr. Wang. During 12 years, 1,312 patients or 15.7% died of cardiovascular-related conditions and 341 died of cerebrovascular-related conditions. “Age-standardized vascular mortality rates were 26.0% and 5.3%, respectively, in persons with RVO and

cholesterol levels, and cigarette smoking status, diabetic retinopathy was associated with an increased risk of ischemic stroke (hazard rate ratio, 2.34; 95% confidence index, 1.13 to 4.86).

The investigators concluded that diabetic retinopathy predicts incident ischemic stroke in people with diabetes, independent of other risk factors. For ophthalmologists, these results show that if retinopathy is detected in a patient who has diabetes, the person

may require a more comprehensive assessment of their stroke risk, Dr. Wong said. ■

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## RVO LINKED TO DOUBLING OF CARDIOVASCULAR MORTALITY IN YOUNGER PATIENTS (CONTINUED)

17.1% and 4.5%, respectively in those without RVO," wrote the investigators. After they adjusted for age, gender, body mass index, hypertension, diabetes, smoking, glaucoma, and study site, RVO was not associated with cardiovascular- or cerebrovascular-related mortality in patients of all ages. In patients aged <70 years, however, baseline RVO was associated with higher cardiovascular mortality (hazard ratio, 2.5; 95% confidence interval, 1.2-5.2).

"Our study may have potential implications for clinical management of patients with RVO," Dr. Wang and colleagues wrote. "Our study suggests that some patients with RVO may benefit from a careful cardiovascular risk assessment." ■

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## CRANIAL MRI, RETINAL PHOTOS LINKED

Another recent study revealed that findings on cranial MRI appear to be associated with retinal photographs in elderly patients. According to a report in the *American Journal of Epidemiology*, associations between MRI and retinal photographs have previously been described mostly in middle-aged people, lead investigator W.T. Longstreth, Jr., MD, and colleagues reported. Dr. Longstreth is from the University of Washington, Seattle.

"Evidence of small vessel disease in the retina increases the likelihood of finding it in the brain," he said in an interview with Reuters Health. Associations in this elderly population were however, less prevalent than those reported in middle-aged people, he added.

In the Cardiovascular Health Study, 1,717 elderly participants underwent MRI and retinal photography between 1991 and 1999. The investigators looked for associations between findings on MRI and four indicators of retinal microvascular disease: retinopathy, focal arteriolar narrowing, arteriovenous nicking, and the arteriovenous ratio. The arteriovenous ratio was based upon semiautomated measurements of arterioles and venules, according to the report.

The authors controlled for age and gender, and found associations between MRI findings and the smaller arteriovenous ratio (per standard deviation decrease): prevalent infarcts (odds ratio [OR]=1.18, 95% confidence interval [CI]: 1.05, 1.34;  $P=.007$ ), white matter grade (regression coefficient, 0.093;  $P=.011$ ), incident infarct (OR=1.26, 95% CI: 1.09, 1.46;  $P=.002$ ), and worsening white matter grade (OR=1.12, 95% CI: 0.98, 1.29;  $P=.09$ ).

Dr. Longstreth and colleagues wrote that arteriovenous nicking was also associated with prevalent (OR=1.84, 95% CI: 1.23, 2.76;  $P=.003$ ) and incident (OR=1.84, 95% CI: 1.15, 2.94;  $P=.011$ ) infarcts.

The adjustment for hypertension and diabetes had minimal effect.

The investigators concluded that evidence of small vessel disease in the retina increases the likelihood of finding it in the brain. ■

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