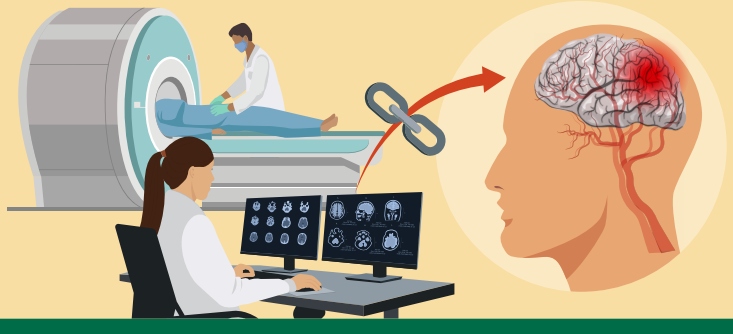
Are MRI-Visible Perivascular Spaces Associated with the Risk of Incident Dementia?

Visible perivascular spaces (PVS) may be more common in patients with cerebral small vessel disease (CSVD) and could potentially play a role in the pathophysiology of patients with neurodegenerative disease



1,449 Framingham Heart Study participants (age ≥ 50 years; with available PVS, covariate and incident dementia data) included in a prospective cohort study

PVS burden rated in the basal ganglia (BG) and central semiovale (CSO) regions and categorized based on PVS counts into 4 grades (I: 1–10, II: 11–20, III: 20–40, and IV: >40)

Over a median follow-up of 8.3 years, incidence of

All-cause dementia	Alzheimer disease	Vascular dementia
15.8%	12.5%	2.5%

Hazard for dementia increases steadily with PVS burden in models that have been adjusted for vascular risk factors and cardiovascular disease

In the CSO (compared to grade I PVS):

- 2-fold increase for patients with grade II PVS (HR 2.44, 95% CI 1.51–3.93)
- 5-fold increase for patients with grade IV PVS (HR 5.05, 95% CI 2.75–9.26)

In the BG (compared to grade I PVS):

- 1.6-fold increase for patients with grade II PVS (HR 1.62, 95% CI 1.15–2.27)
- 2.6-fold increase for patients with grade IV PVS (HR 2.67, 95% CI 1.04–6.88)

HR: hazard ratio CI: confidence interval

After adjustment for white matter hyperintensity volume, covert infarcts, and total brain volume, the association between the risk of all-cause dementia and PVS remained significant for all grades of PVS located in the CSO only

Similar findings observed for AD; results for vascular dementia were not statistically significant

Higher burden of PVS in CSO is associated with an increased risk of developing dementia

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