

# Prominent vessel sign

The prominent vessel sign (PVS) on [SWI](#) refers to asymmetric multiple [hypointense](#) vessels in the area of [cerebral ischemia](#) <sup>1) 2)</sup>.

It is widely accepted that the PVS is caused by the increased [oxygen extraction fraction](#). In [acute ischemic stroke](#), when [blood flow](#) is significantly decreased, the oxygen extraction fraction of the involved [brain tissue](#) is elevated, leading to an increase in [deoxyhemoglobin](#) in veins and capillaries. Deoxyhemoglobin is a paramagnetic substance with high magnetic susceptibility, which shows the PVS on SWI <sup>3) 4) 5) 6)</sup>

To determine the value of [susceptibility weighted imaging \(SWI\)](#) for collateral estimation and for predicting [functional outcomes](#) after [acute ischemic stroke](#). To identify independent [predictors](#) of favorable functional outcomes, age, sex, [risk factors](#), baseline National Institutes of Health Stroke Scale ([NIHSS](#)) score, baseline diffusion-weighted imaging ([DWI](#)) lesion [volume](#), site of steno-occlusion, SWI collateral grade, mode of treatment, and successful [reperfusion](#) were evaluated by multiple [logistic regression](#) analyses. A total of 152 participants were evaluated. A younger age (adjusted [odds ratio](#) (aOR), 0.42; 95% [confidence interval](#) (CI) 0.34 to 0.77;  $P < 0.001$ ), a lower baseline NIHSS score (aOR 0.90; 95% CI 0.82 to 0.98;  $P = 0.02$ ), a smaller baseline DWI lesion volume (aOR 0.83; 95% CI 0.73 to 0.96;  $P = 0.01$ ), an intermediate collateral grade (aOR 9.49; 95% CI 1.36 to 66.38;  $P = 0.02$ ), a good collateral grade (aOR 6.22; 95% CI 1.16 to 33.24;  $P = 0.03$ ), and successful reperfusion (aOR 5.84; 95% CI 2.08 to 16.42;  $P = 0.001$ ) were independently associated with a favorable functional outcome. There was a linear association between the SWI collateral grades and functional outcome ( $P = 0.008$ ). Collateral estimation using the [prominent vessel sign](#) on SWI is clinically reliable, as it has prognostic value <sup>7)</sup>.

<sup>1)</sup>

Chen, C. Y., Chen, C. I., Tsai, F. Y., Tsai, P. H. & Chan, W. P. Prominent vessel sign on susceptibility-weighted imaging in acute stroke: prediction of infarct growth and clinical outcome. PLoS ONE 10, e0131118 (2015).

<sup>2)</sup>

Liang, J. et al. Susceptibility-weighted imaging in post-treatment evaluation in the early stage in patients with [acute ischemic stroke](#). J. Int. Med. Res. 47, 196–205 (2019).

<sup>3)</sup>

Hermier, M. & Nighoghossian, N. Contribution of susceptibility-weighted imaging to acute stroke assessment. Stroke 35, 1989–1994 (2004).

<sup>4)</sup>

Geisler, B. S. et al. Blood-oxygen-level-dependent MRI allows metabolic description of tissue at risk in acute stroke patients. Stroke 37, 1778–1784 (2006).

<sup>5)</sup>

Xia, S. et al. Decreased oxygen saturation in asymmetrically prominent cortical veins in patients with cerebral ischemic stroke. Magn. Reson. Imaging 32, 1272–1276 (2014).

<sup>6)</sup>

Kesavadas, C., Santhosh, K. & Thomas, B. Susceptibility weighted imaging in cerebral hypoperfusion- can we predict increased oxygen extraction fraction?. Neuroradiology 52, 1047–1054 (2010).

<sup>7)</sup>

Lee HJ, Roh HG, Lee SB, Jeon YS, Park JJ, Lee TJ, Jung YJ, Choi JW, Chun YI, Ki HJ, Cho J, Lee JS, Kim HJ. Collateral estimation by susceptibility-weighted imaging and prediction of functional outcomes after acute anterior circulation ischemic stroke. Sci Rep. 2021 Nov 1;11(1):21370. doi:

10.1038/s41598-021-00775-9. PMID: 34725373.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=prominent\\_vessel\\_sign](https://neurosurgerywiki.com/wiki/doku.php?id=prominent_vessel_sign)

Last update: **2024/06/07 02:58**

