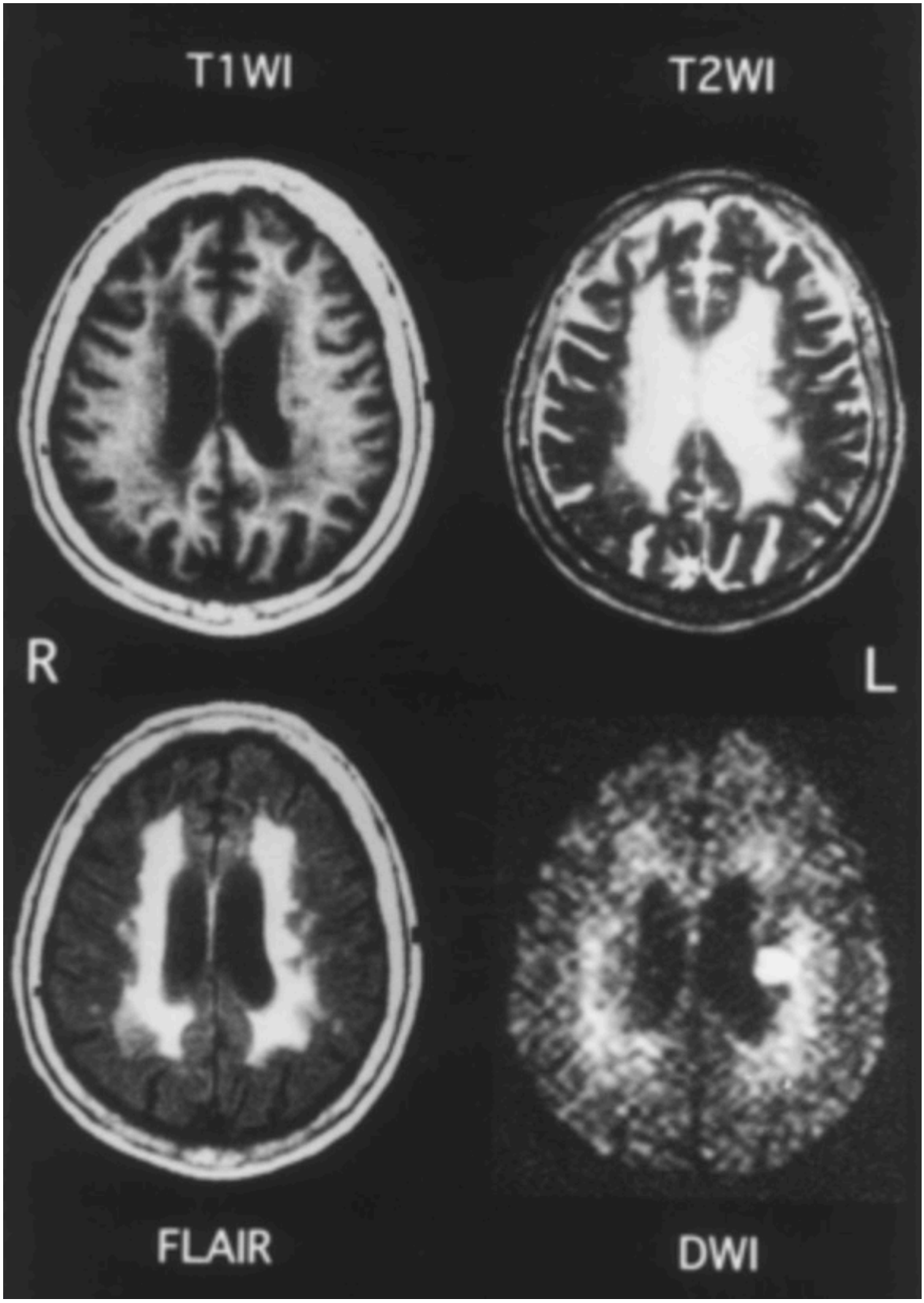
Periventricular hyperintensity

White matter changes such as periventricular hyperintensity (PVH) and deep white matter hyperintensity (DWMH) are associated with both periventricular edema and ischemic white matter degeneration.

The frequency of grade 0 periventricular hyperintensity (PVH) was greater among patients with brain metastases (BM), compared to those without BM ($p = 0.001$). In a multivariate analysis, patients with adenocarcinoma (95% confidence interval [CI] 1.8-171.8) and small cell carcinoma (95% CI 1.4-172.4) respectively developed BM at 9.3- and 8.8-fold higher rates than those with squamous cell carcinoma. Patients with grade 0 PVH developed BM at a rate 3.5-, 8.6-, and 3.6-fold higher rates than those with grade 1 (95% CI 1.4-9.0), 2 (95% CI 2.4-41.9), and 3 (95% CI 1.02-15.0), respectively. Lung cancer patients with grade 0 PVH on initial MR images have a high subsequent incidence of BM. PVH is a useful method for evaluating risk of BM [1)].

Their diagnostic and predictive value in normal pressure hydrocephalus (NPH) is unclear.

The presence of DWMH or subcortical lacunar infarctions in NPH did not predict a poor outcome from shunt surgery and should not be used as exclusion criteria for shunting. No MR imaging findings could predict outcome of shunt surgery in patients with NPH. Clinical improvement after surgery is associated with reduction in the irregular type of periventricular hyperintensity (PVH) located around the frontal horns [2)].



MRI of 72-year-old woman admitted because of right hemiparesis. MRI was performed 7 days after onset. T1-weighted imaging revealed multiple low-intensity areas around the ventricle, and both T2-weighted imaging and FLAIR showed an area of severe periventricular hyperintensity with suspected multiple high-intensity lesions. DWI showed a high-intensity area that coincided with clinical features on the left corona radiata.

1)

Hayashi N, Mitsuya K, Nakasu Y, Naito T, Ohka F, Takahashi T. Negative impact of leukoaraiosis on the

incidence of brain metastases in patients with lung cancer. J Neurooncol. 2017 Nov;135(2):299-306. doi: 10.1007/s11060-017-2574-x. Epub 2017 Jul 27. PubMed PMID: 28752500; PubMed Central PMCID: PMC5663801.
2)
Tullberg M, Jensen C, Ekholm S, Wikkelsø C. Normal pressure hydrocephalus: vascular white matter changes on MR images must not exclude patients from shunt surgery. AJNR Am J Neuroradiol. 2001 Oct;22(9):1665-73. PubMed PMID: 11673159.