

Definition

Synonyms: Arteriolosclerosis • Small vessel disease • Microangiopathy • Periventricular leukoencephalopathy • **Severe form:** Binswanger disease, subcortical arteriolosclerotic encephalopathy.

▶ Epidemiology

Vascular dementia is the third most common form of dementia.

▶ Etiology, pathophysiology, pathogenesis

Vessels of intermediate size with a long intraparenchymal course react more sensitively to depressed or elevated blood pressure than do cortical vessels as ambient conditions restrict autoregulation and are less conducive to collateralization.

Imaging Signs

▶ Modality of choice

MRI.

▶ CT findings

Multiple partially confluent poorly demarcated hypodense areas.

▶ MRI findings

- T2-weighted images: Hyperintense areas consisting of small demarcated foci and/or nodular confluent lesions.
- T1-weighted images: Hypointense areas comprising small demarcated foci and/or nodular confluent lesions, but generally less clearly discernable than on T2-weighted images.
- MRA: Extracranial or intracranial stenoses are occasionally demonstrated.

▶ DSA findings

Stenoses of smaller and larger vessels.

Clinical Aspects

▶ Typical presentation

Common form: Asymptomatic or transient ischemic attack • **Severe form:** Dementia, bulbar paralysis, and/or motor symptoms.

▶ Therapeutic options

The common form requires no treatment • Prognosis is good • Aggregation inhibitors • Severe form requires treatment of possible underlying hypertension.

▶ Course and prognosis

Course is gradually progressive.

▶ What does the clinician want to know?

Extent of white matter damage • Exclude other types of ischemia.

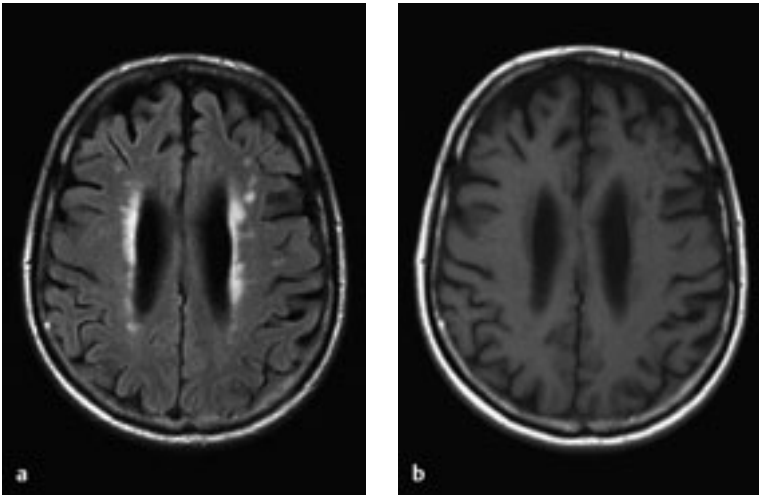


Fig. 1.23 a, b Ischemia of minor vessels. Axial dark-fluid sequence (a) and T1-weighted sequence (b). Hyperintense partially nodular, partially confluent lesions on the dark-fluid sequence. Lesions appear hypointense on the T1-weighted sequence.

Differential Diagnosis

Multiple sclerosis

- Often affects younger patients
- Possible spinal cord involvement
- CSF findings

Prominent Virchow–Robin spaces

- Central contrast enhancement

Tips and Pitfalls

Can be misinterpreted as multiple sclerosis.

Selected References

- Enzinger C et al. Progression of cerebral white matter lesions—clinical and radiological considerations. *J Neurol Sci* 2007; 15: 5–10
- Guermazi A et al. Neuroradiological findings in vascular dementia. *Neuroradiology* 2007; 49: 1–22
- Matsusue E et al. White matter changes in elderly people: MR-pathologic correlations. *Magn Reson Med Sci* 2006; 5: 99–104