Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Vernooij MW, Ikram MA, Tanghe HL, et al. Incidental findings on brain MRI in the general population. N Engl J Med 2007;357:1821-8.

Imaging diagnosis	Case definition based on MRI characteristics
Asymptomatic brain infarcts	
Lacunar infarct	Focal parenchymal lesion ≥ 3 mm and < 15 mm in size, with the same signal characteristics as cerebrospinal fluid on all sequences, and -when located supratentorially- with a hyperintense rim on the FLAIR images.[1-3] No involvement of cortical grey matter. Commonly located in the basal ganglia, internal capsule, pons and corona radiata. Differentiation from Virchow-Robin (VR) spaces is based on signal intensity (absence of hyperintense rim on FLAIR images), shape (VR-spaces are more linear or lobulated in shape) and location (VR-spaces are often located around anterior commissure or near vertex of the brain).[4, 5]
Subcortical infarct	Same MRI characteristics as lacunar infarct, but ≥ 15 mm in size.
Cortical infarct	Focal parenchymal lesion with involvement of cortical grey matter, with the same signal characteristics as cerebrospinal fluid on all sequences, and -when located supratentorially- with a hyperintense rim on the FLAIR images.[1-3] Tissue loss of variable magnitude present, visible as prominent adjacent sulci and ipsilateral ventricular enlargement.[6]
Primary tumors, benign	
Meningioma	Extra-axial lesion. Iso- or hypointense to grey matter on T1-weighted images, variable signal intensity on PD-weighted images. Calcifications (hypointense on T1-weighted and PD-weighted images) within lesion and/or hyperostosis of underlying bone may be present. Usually broad dural basis. When large, these lesions may cause moderate vasogenic edema in underlying brain tissue.[6]
Vestibular schwannoma	Extra-axial lesion. Iso- or hypointense to grey matter on T1-weighted

	images. Located in the internal auditory canal, with variable extension into the cerebellopontine angle. Often with widening of the internal auditory canal when large. Typical ”ice cream cone” appearance.[6] Can show cystic changes (visible as high signal intensity on PD-weighted images).[7]
Intracranial lipoma	Lesion with the same signal characteristics as subcutaneous fat on all sequences. Sometimes with intralesional vessels seen as flow voids.[8, 9]
Trigeminal schwannoma	Extra-axial lesion with signal characteristics similar to vestibular schwannoma except the course follows that of the 5th cranial nerve.[6, 10]
Pituitary macroadenoma	Intrasellar mass, extending suprasellar and/or parasellar, frequently causing deviation of the pituitary stalk. May extend upward toward the optic chiasm. The normal pituitary gland may not be identified. Signal intensity usually isointense to grey matter on all sequences, but the lesion may show cystic changes (cystic macroadenoma; high signal intensity on PD-weighted images).[6]
Primary tumors, malignant	
Low-grade glioma	Diffuse lesion with mass effect and signal changes: hypointense relative to surrounding brain on T1-weighted images, hyperintense on PD-weighted and FLAIR images. No signs of necrosis or hemorrhage.[6]
Other findings	
Aneurysm	The presence of aneurysms is evaluated on PD-weighted images, on which arterial structures are visualized as flow voids (black). Aneurysms are defined as blind-ending, well delineated focal arterial out-pouchings with a saccular shape. Location usually in cavernous internal carotid artery or circle of Willis. Commonly located at vessel bifurcations.[6]

Cavernous angioma	”Popcorn-like”, smoothly circumscribed, well-delineated parenchymal lesion. Complex reticulated core of mixed signal intensities, representing hemorrhage in various stages of evolution. Low-signal-intensity hemosiderin rim completely surrounding the lesion on both T1-weighted and PD-weighted images. On T2* GRE imaging, paramagnetic properties of hemosiderin cause a focus of signal loss. No feeding artery or draining vein demonstrated.[6]
Metastases	Multifocal parenchymal round lesions with mass effect. Generally iso- to mildly hypointense on T1-weighted images, hyperintense on PD-weighted images. Variable amount of edema surrounding each lesion. Hemorrhage may be present in some lesions (causing susceptibility artifacts on T2* GRE images).[6]
Chronic subdural hematoma	Crescent-shaped extra-axial fluid collection. Hyperintense signal intensity on PD-weighted images. Often not homogeneous in signal intensity due to presence of blood in different stages, with septae separating different blood products. The extra-axial fluid collection does not cross dural attachments, but does cross sutures.[6]
Arachnoid cyst	Sharply-demarcated well-defined extra-axial cystic lesion exhibiting isointense signal to cerebrospinal fluid on all sequences (including on FLAIR images). No internal architecture. Typical locations are temporal or infratentorial (cerebellopontine angle, cisterna magna).[6]
Chiari I malformation	Tonsillar herniation extending more than 5 mm below the foramen magnum. The plane of the foramen magnum is defined on sagittal T1-weighted images by a line connecting the basion and opisthion, and degree of tonsillar herniation is measured perpendicular from this line to

	the most inferior aspect of the cerebellar tonsils visible on all sections.[11]
Major vessel stenosis	Absence of flow void on T1-weighted and PD-weighted images in carotid or vertebral artery.[12]
Extra-cranial dermoid cyst	Extra-cranial lesion usually located around bony sutures (typical near superolateral orbital rim). Well-defined lesion, usually hypointense on T1-weighted and hyperintense on PD-weighted images. May exhibit a fat-fluid level. Shows bony remodelling without destruction.[13]
Fibrous dysplasia	Bony expansion with intact but thickened cortex. Low signal intensity on both T1-weighted and PD-weighted images, as well as on FLAIR images.[6, 14] No extension into soft tissue. Typical locations in the skull are frontal, sphenoid, maxillary, and ethmoidal bones.[14]

FLAIR fluid-attenuated inversion recovery; PD proton density; GRE gradient-recalled echo.

Note that the PD-weighted sequence used in our MR protocol is a fast spin echo sequence with a long repetition time (12,300 ms), which results in hyperintense signal of (cerebrospinal) fluid, comparable to the tissue-fluid contrast seen in T2-weighted sequences.

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