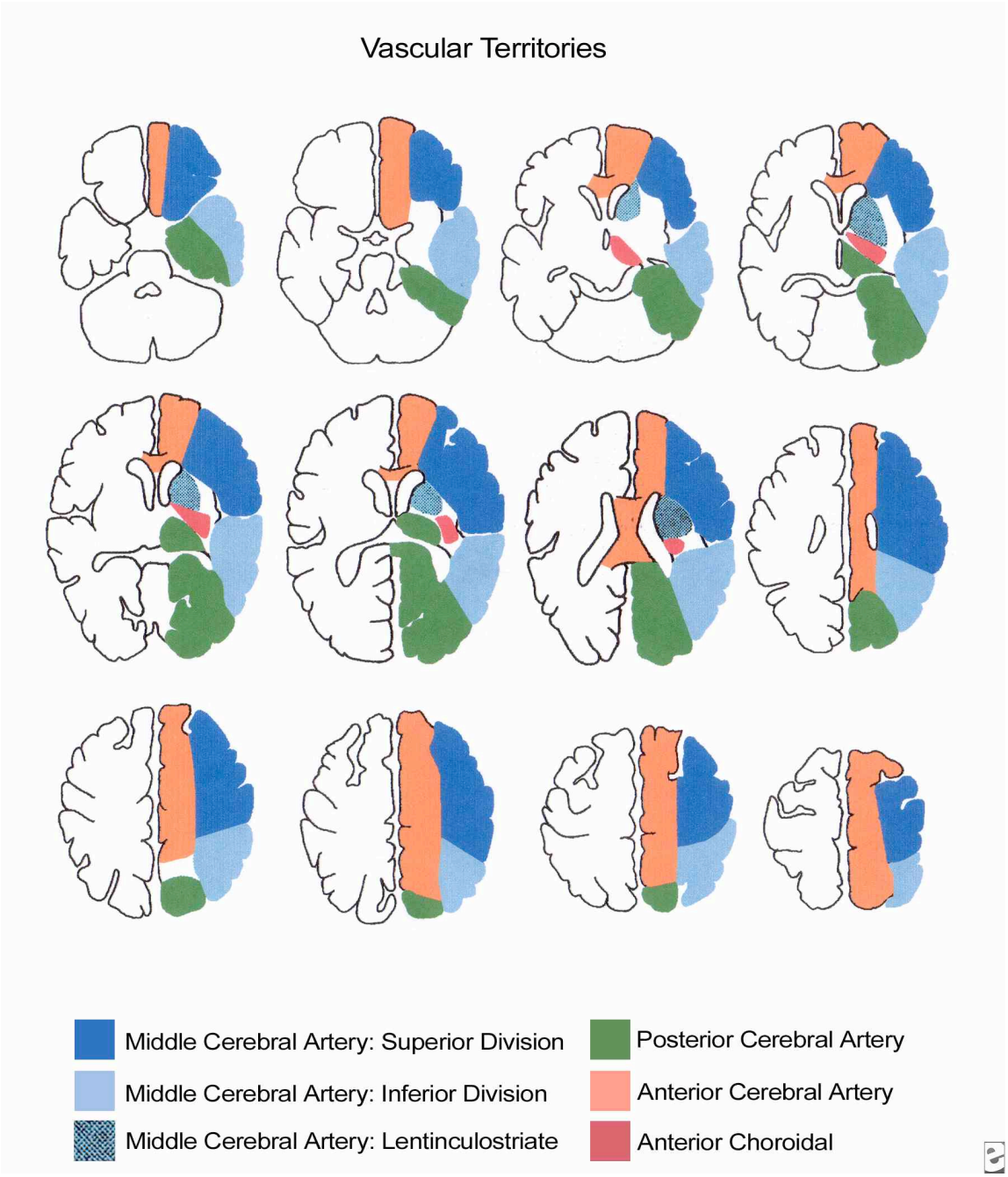
Ischaemic Stroke Territories



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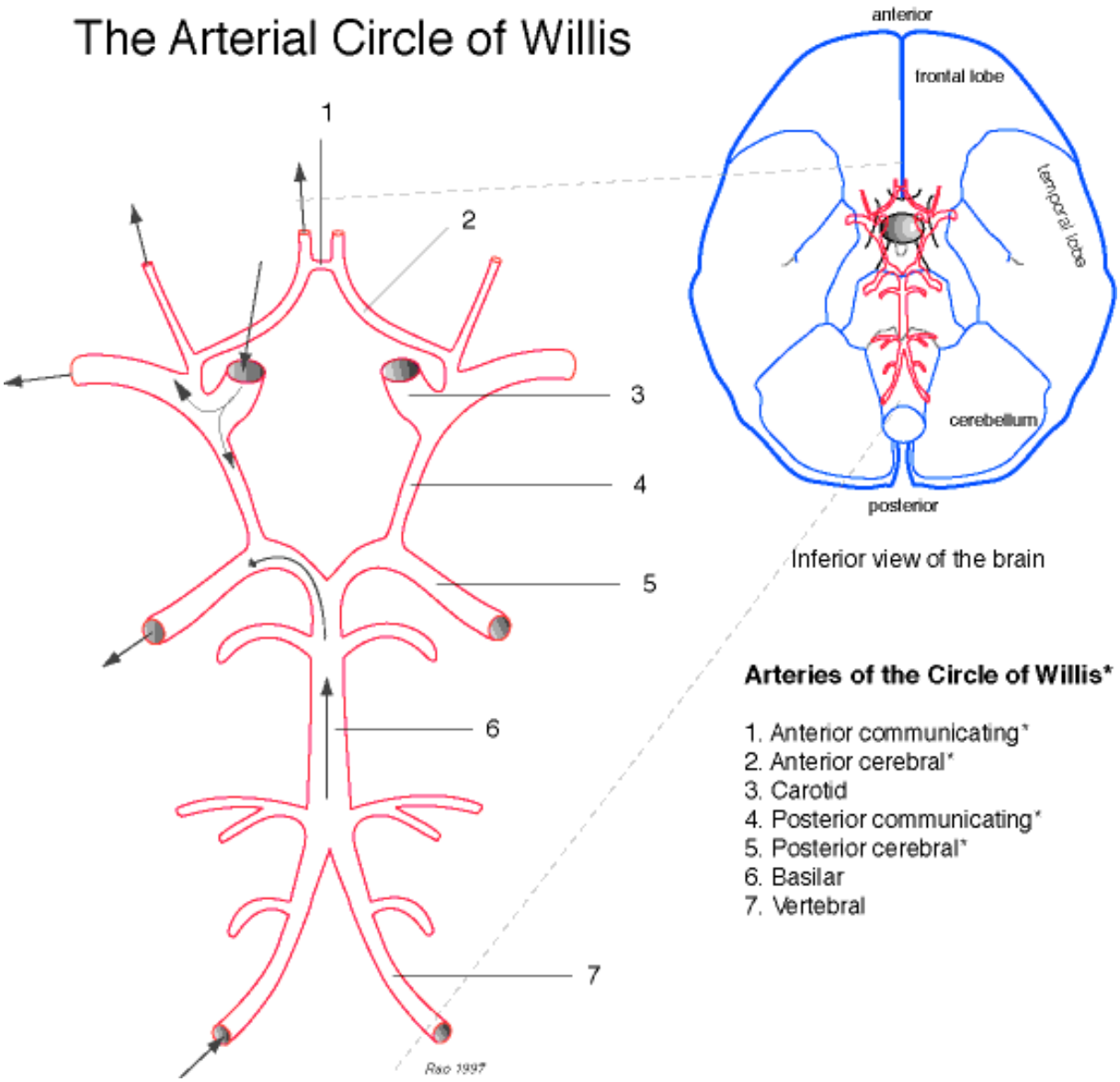

*Thomas Willis b.1621, English anatomist and physician

Syndromes of cerebral infarction
(Oxford Textbook of Medicine 4th Edition/eMedicine)

- Internal carotid artery may cause no symptoms at all or infarction in the entire territory of the ipsilateral anterior and middle cerebral arter
- Effects depends on the presence of a complete Circle of Willis and other collaterals
- Dissection--subadventitial bulging of the artery may cause Horner's syndrome and lower cranial nerve palsies, with or without infarction

1. Infarcts in the area of the anterior cerebral artery

- 2% of infarcts
- These cause contralateral hemiparesis (more in leg than arm), with no/mild sensory deficit.
- Other frontal lobe features include mutism, or dis-inhibition and speech perseveration, primitive reflexes (eg, grasping, sucking reflexes), altered mental status, impaired judgment, contralateral cortical sensory deficits, gait apraxia, and urinary incontinence

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2. Middle cerebral artery infarcts

- 90% of infarcts
- Contralateral hemiplegia (more in arm and face), contralateral sensory deficit or, ipsilateral hemianopia, and cognitive defects such as aphasia (dominant hemisphere) or contralateral neglect (non-dominant hemisphere).
- Massive infarction of entire territory may lead to brain swelling & fatal herniation, esp. in young patients without cerebral atrophy.

3. Posterior cerebral artery syndrome

- 5% of infarcts
- May include contralateral homonymous hemianopia (occipital lobe), amnesia (lower temporal lobe), and oculomotor disorders or disturbances of language or visuospatial function, through the involvement of perforating branches to the thalamus.

4. Vertebral artery

Wallenberg's syndrome= ipsilateral cerebellar ataxia through infarction of the inferior part of the cerebellum + a slightly bewildering combination of deficits through infarction of the dorsolateral medulla: decreased skin sensation in the ipsilateral half of the face and the contralateral half of the body, ipsilateral Horner's syndrome, ipsilateral weakness of the soft palate, larynx and pharynx, and rotatory vertigo

5. Basilar artery syndrome

- Full- infarction of most of the pons and midbrain, consists of coma, tetraparesis including facial movements, and loss of all eye movements and of pupillary and corneal reflexes
- Partial syndromes-
  - a. locked-in syndrome (infarction of the base of the pons), with tetraparesis including facial movements and loss of horizontal eye movements. Consciousness is preserved through sparing of the reticular formation, but patients can communicate only through vertical eye movements.
  - b. basilar syndrome, with variable combinations of hemianopia or complete cortical blindness (occipital lobes), amnesia (inferior temporal lobes), as well as vertical gaze palsies, pupillary disturbances, and hallucinations (perforating branches to the midbrain).

6. Lacunar strokes

- 13-20% of infarctions
- occlusion of the small, perforating arteries of the deep subcortical areas of the brain
- 2-20 mm infarctions
- most common include pure motor, pure sensory, and ataxic hemiparetic strokes.