



Cortical Syndromes

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ANATOMY

The paired cerebral hemispheres are connected by a large band of white matter fibers, the *corpus callosum*. Each hemisphere consists of four anatomically and functionally distinct regions: the frontal, temporal, parietal, and occipital lobes (Fig. 107-1). The two cerebral hemispheres supplement each other functionally in a variety of behavioral and sensorimotor tasks; however, certain functions, particularly language, manual dexterity, and visuospatial perception, are strongly lateralized to one hemisphere. Language function is lateralized to the left hemisphere in 95% of the population; although 15% of people are left-handed, the right

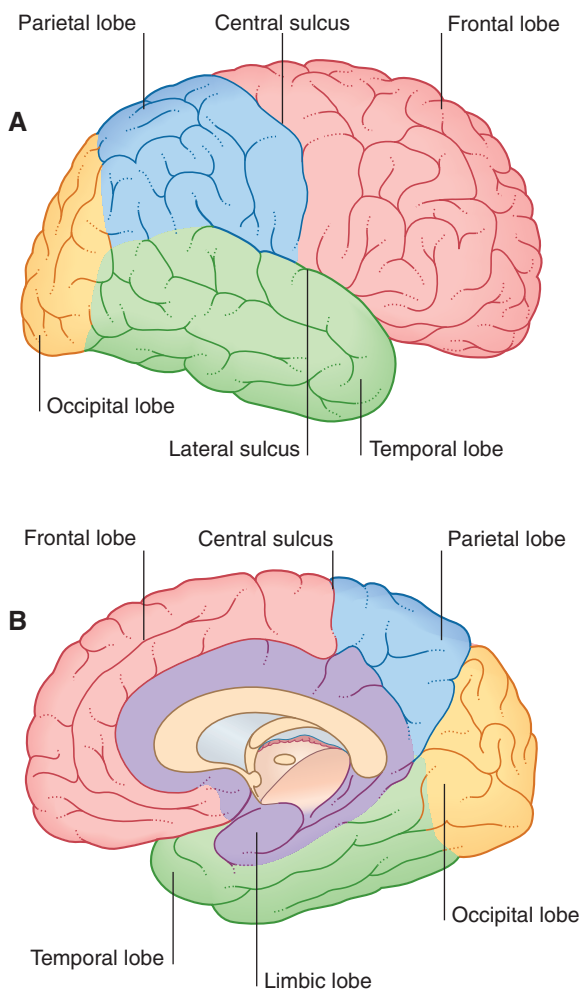


FIGURE 107-1 Lateral (A) and medial (B) views of the cerebral hemispheres. (From FitzGerald MJT, editor: *Clinical neuroanatomy and neuroscience*, ed 6, Philadelphia, 2011, Saunders, Fig. 2-1.)

hemisphere is dominant for language in only between 10% and 27% depending on the degree of left-handedness. Visuospatial functions are largely subserved by the right (nondominant) hemisphere. The Rolandic fissure separates the motor cortex (precentral gyrus) from the sensory cortex (postcentral gyrus). In these regions, cortical representations of the different parts of the body are arranged as the motor (frontal lobe) and sensory (parietal lobe) homunculi (Fig. 107-2).

CLINICAL ASSESSMENT

Symptoms and signs caused by cortical lesions may be less consistent than deficits caused by lesions of the spinal cord or more peripheral nerves, and patients may be unaware of the extent of their deficit. This makes a collateral history and careful examination (including cognitive assessment) important. In addition, there is substantial individual variability among patients. The rate of onset of symptoms and the tempo of progression influence the extent of the clinical deficit. The homuncular arrangement of cortical motor and sensory representation may allow for more precise localization of a lesion. For instance, motor or sensory signs confined to the lower extremities may suggest a parasagittal lesion, whereas signs involving the face and upper limb may originate in laterally placed cortical lesions.

REGIONAL SYNDROMES

Table 107-1 summarizes some of the eponymous syndromes and clinical features associated with damage to individual lobes.

Aphasia

Aphasia or *dysphasia* refers to a loss or impairment of language function as a result of damage to the specific language centers of the dominant hemisphere. It is distinct from dysarthria, which is a disturbance in the articulation of speech. The principal types of aphasia are summarized in Table 107-2.

Writing is almost invariably affected in patients with disturbances of language (Fig. 107-3). An exception to this occurs in the syndrome of *alexia without agraphia*, which results from a lesion in the dominant occipital lobe and splenium of corpus callosum (usually caused by infarction in the territory of the posterior cerebral artery). The patient's language center is "disconnected" from the contralateral (unaffected) visual cortex. Such patients can write a sentence but are unable to read what they have written.

Clinical assessment for aphasia requires testing of fluency, comprehension, repetition, naming, reading, calculation, and writing. *Anomia* (difficulty in recalling the names of objects) in isolation has little localizing value.