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Neurologic Evaluation of the Patient

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INTRODUCTION

To arrive at an accurate neurologic diagnosis, the clinician generates and tests hypotheses about the location and the mechanism of injury to the nervous system. Hypotheses are refined as the clinician progresses from the interview to the physical examination to the laboratory assessment of the patient. The focus is first placed on entities that are common, serious, and treatable. Typical clinical presentations of patients with common diseases account for 80% of cases, unusual presentations of patients with common diseases account for 15%, typical presentations of patients with rare diseases account for 5%, and unusual presentations of patients with rare diseases account for less than 1%.

TAKING A NEUROLOGIC HISTORY

The clinician must determine the location, quality, and timing of symptoms. He or she must ask the patient to report the progression of symptoms rather than a litany of diagnostic procedures and specialty evaluations. Establishing when the patient last felt normal is important. Ambiguous descriptors such as *dizzy* should be rejected in favor of evocative descriptors such as *lightheaded* (which may implicate cardiovascular insufficiency) or *off balance* (which may implicate cerebellar or posterior column dysfunction).

Family members and other witnesses should corroborate historical information when appropriate. Historical information should include the medical and surgical histories; current medications; allergies; family history; review of systems; and social history, including the patient's level of education, work history, possible toxin exposures, substance use, sexual history, current life circumstance, and overall function.

Clues to localization are sought during the interview. For example, pain is usually caused by a lesion of the peripheral nervous system, whereas aphasia (i.e., disordered language processing) indicates an abnormality of the central nervous system. Because sensory and motor functions are anatomically relatively distant in the cerebral cortex but progressively closer together as fibers converge in the brain stem, spinal cord, roots, and peripheral nerves, the coexistence of sensory loss and motor dysfunction in a limb implies a large lesion at the level of the cortex or a smaller lesion lower down in the neuraxis. Small lesions in areas of high traffic such as the spinal cord or brain stem can result in widespread neurologic dysfunction, whereas small lesions elsewhere may be asymptomatic.

Table 104-1 lists the potential localizing values of common neurologic symptoms to help address the issue of lesion localization. Tables 104-2 and 104-3 list symptoms that are commonly associated with lesions at specific locations in the nervous system. Some symptoms can result from a lesion at any of several levels of the nervous system. For example, double vision can result from a focal lesion in the brain stem, peripheral nerves (cranial nerve III, IV, or VI), neuromuscular junction, or extraocular muscles; or it can be nonfocal and result from an increase in intracranial pressure. Associated symptoms (or their lack) may lead the interviewer to reject certain hypotheses that at first seemed most likely. Table 104-4 lists the most important types of neuropathologic conditions and provides examples of diseases in each category.

Some neuroanatomic locations point to a specific diagnosis or a limited number of diagnoses. For example, disease of the neuromuscular junction is usually caused by an autoimmune process such as myasthenia gravis (common) or Eaton-Lambert myasthenic syndrome (uncommon). The exceptions—botulism and congenital myasthenic disorders—are rare. Alternatively, some areas of the nervous system (e.g., the cerebral hemispheres) are vulnerable to practically any of the categories of disease outlined in Table 104-4.

The pace and temporal order of symptoms are important. Degenerative diseases usually progress gradually, whereas vascular diseases (e.g., stroke, aneurysmal subarachnoid hemorrhage) progress rapidly. Certain symptoms such as double vision almost invariably develop abruptly, even if the underlying disorder has been developing gradually over days to weeks.

TABLE 104-1 POTENTIAL LOCALIZING VALUE OF COMMON NEUROLOGIC SYMPTOMS

POTENTIAL LOCALIZING VALUE	SIGN OR SYMPTOM
High	Focal weakness, sensory loss, or pain
	Focal visual loss
	Language disturbance
	Neglect or anosognosia
Medium	Vertigo
	Dysarthria
	Clumsiness
Low	Fatigue
	Headache
	Insomnia
	Dizziness
	Anxiety, confusion, or psychosis