Clinical Neurology

The Resident's Guide

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edited by

Alexandre B. Todorov, M.D.

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PREFACE

Teaching neurology to non-neurology residents is very different from working with future neurologists. The non-neurology residents undertake responsibilities longitudinally and maintain their own interests during sub-specialty rotations. Such residents have their own clinics and call schedules, leaving to the rotation about twenty half-days per month. The objectives to be achieved during a short period of time are forcefully limited. To maximize the learning process, the rotation has to be structured around the resident's needs and to respond to his/her demands. Non-neurology residents are interested in treatable conditions, frequent enough to be encountered in their practice. Knowledge of a few conditions is not synonymous with superficiality. It is the intention of the book to help the residents achieve competency in specific areas, know their own limitations, and become aware when to refer a patient to a consultant.

Clinical Neurology: The Resident's Guide can be completed during a month-long rotation. The book contains discussions of selected topics by seventeen contributors. Since rotations usually occur during the third year of residency, it is assumed the reader has already acquired specialty experience. The self-assessment sections complement the text and serve as a starting point for a discussion with the faculty. The questions are difficult and are construed as an open-book challenge to the resident.

A collaborative work, rather than any single-individual's, was felt more appropriate to the goal of a competency curriculum. It was felt important to expose the residents to a group of teachers, each teacher with his particular approach to a neurologically disabled patient. In a collaborative work, there is of necessity some repetition of topics that are usually carefully edited. In this book, such repetitions were maintained, as they reinforce skills to be acquired by the reader.

The illustrations in this volume were done by Floyd Hosmer, Walt Moore, Elizabeth Singleton and Agnes Todorov. Additional thanks to Floyd E. Hosmer for his contribution in directing the artwork. The secretarial support of Barbara Bunt, Janelle Lyons and Cynthia Trantham is gratefully acknowledged, as is the assistance of Marguerite Todorov. I am most appreciative of Jill G. Rudansky and James Costello from Thieme-Stratton Inc., for their continuous help.

Alexandre B. Todorov

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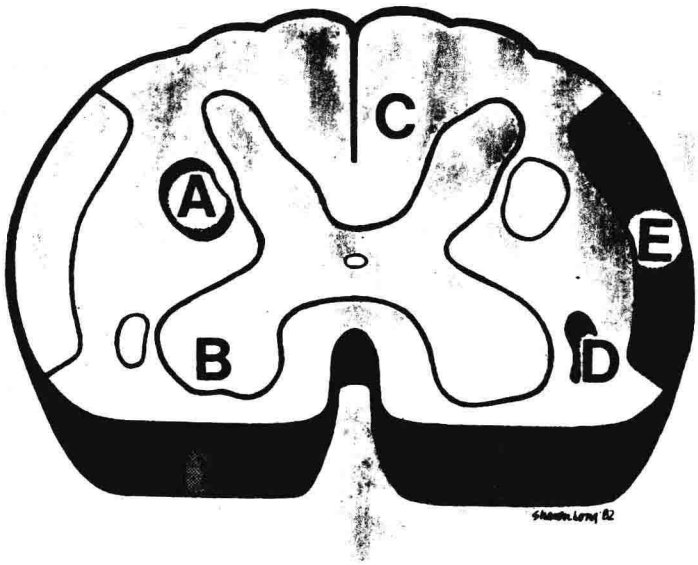
1
Pre-Test

The intention of this section is to insure that you have already acquired basic concepts. The test consists of 30 questions. You should be able to answer 80% correctly. Each of the questions or statements is followed by five suggested answers. Please circle the one that is the BEST possible answer in each case. At the end of the section you will find the answers to the questions.

*

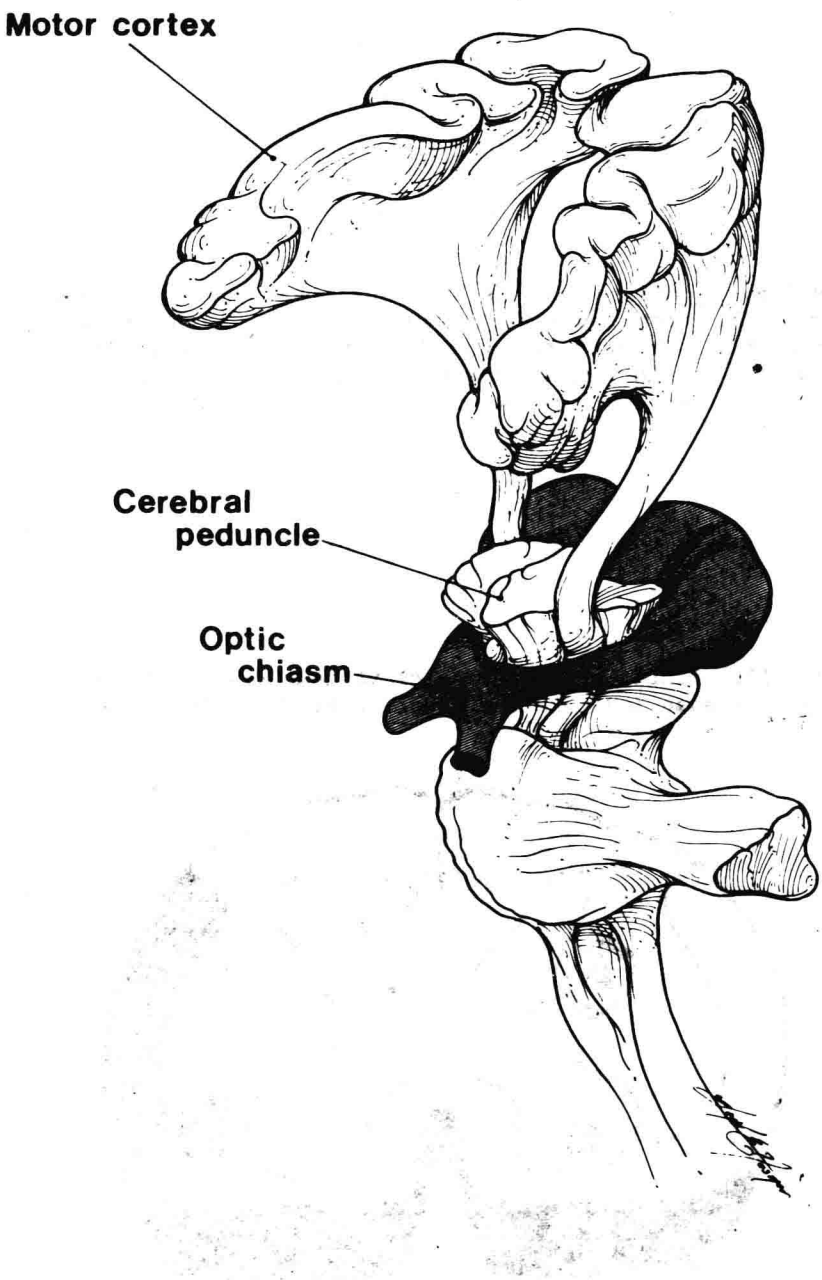
* *

1. This figure illustrates the location of various tracts of the cervical spinal cord. Please indicate the location of the lateral spinothalamic tract:



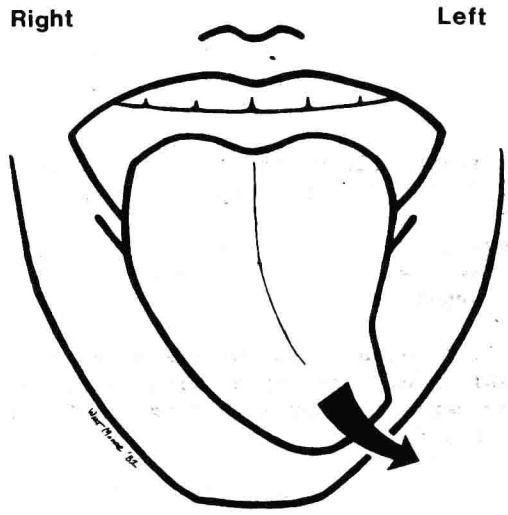
2. A visual field defect in association with a long tract corticospinal (motor) deficit localizes the lesion to the:

A. Optic nerve
B. Optic chiasm
C. Cerebral hemisphere/ cerebral peduncle
D. Pons
E. Medulla



3. The following figure illustrates a lesion of the:

A. Left glossopharyngeal/vagus nerve
B. Left hypoglossal
C. Right glossopharyngeal/vagus nerve
D. Right eleventh cranial nerve
E. Right hypoglossal



4. A patient with mainly shoulder/hip girdle weakness is suspected of having:

A. Polymyositis
B. Poliomyelitis
C. Multiple sclerosis
D. Spinal cord tumor
E. Myotonic dystrophy

5. A patient is complaining of paresthesias in his lower extremities. He has a distal sensory loss, the feet being affected more than the hands. The most likely diagnosis is:

A. Polyneuropathy
B. Syringomyelia
C. Radiculopathy
D. Multiple sclerosis
E. Amyotrophic lateral sclerosis

6. The proper sequence in the evaluation of a coma from an unknown cause is:

A. X-rays, neurologic examination, airway support, 30 ml 50% glucose IV
B. Airway support, X-rays, neurologic examination, stat lab, 30 ml 50% glucose IV
C. 30 ml 50% glucose IV, stat lab, X-rays, airway support, neurologic examination
D. Airway support, stat lab, 30 ml 50% glucose IV, neurologic examination, X-rays
E. Neurologic examination, airway support, stat lab, X-rays, 30 ml 50% glucose IV

7. In the emergency room, a spinal tap must be performed if you suspect:

A. Brain tumor
B. Brain abscess
C. Skull fracture
D. Meningitis
E. Alzheimer's disease

8. A patient with Pneumococcal meningitis who has a serious allergy to penicillin should be treated with:

A. Cefamandole
B. Oxacillin
C. Chloramphenicol
D. Clindamycin
E. Tetracycline

9. A patient who has a spinal fluid with 1100 WBC's, 90% of them polymorphonuclear leucocytes, must have a presumptive diagnosis of:

A. Bacterial meningitis
B. Tuberculous meningitis
C. Meningovascular syphilis
D. Viral meningitis
E. Cryptococcal meningitis

10. A car accident victim is brought to the emergency room. The patient is speaking spontaneously, fully conscious with no neurologic deficit. The X-rays show a linear skull fracture. During the first four hours such a patient should be checked every:

A. Five minutes
B. Fifteen minutes
C. One hour
D. Two hours
E. Four hours

11. The medication of choice for 3 c/sec spike and wave petit mal epilepsy is:

A. Phenobarbital
B. Phenytoin (Dilantin)
C. Carbamazepine (Tegretol)
D. Valproic acid (Depakene)
E. Ethosuximide (Zarontin)

12. An elderly person treated with Coumadin for leg vein thrombosis has a motor deficit that gradually and progressively increases. The most likely etiology is:

A. Transient ischemic attack
B. Cerebral emboli (thrombosis)
C. Subarachnoid hemorrhage
D. Cerebral hemisphere hemorrhage
E. Intraventricular bleeding

13. In which one of the following instances should a child be referred to a speech pathologist?

A. By the age of 10 to 12 months "talks" to toys and people throughout the day using long patterns of sounds
B. By the age of 24 months uses one-word sentences
C. By the age of 30 to 33 months tells gender when asked
D. By the age of 34 to 36 months carries out three simple verbal commands given in one long utterance
E. Word endings (final consonants) are present at age five

14. Which statement is true regarding neurologic problems during pregnancy?

A. Ergot alkaloids are indicated for migrainous attacks in pregnant women
B. Calcium carbonate and gluconate are useful for treating leg cramps during pregnancy
C. Pregnancy is contraindicated for epileptic women
D. The prognosis of Bell's palsy during pregnancy is worse than for the general population
E. Benzodiazepine tranquilizers are recommended for muscle contraction/ tension headache during pregnancy

15. Seizures in children have different characteristics than in adults. Which of the following is true?

A. Children with seizures need to be routinely assessed by computerized tomography
B. Anticonvulsant therapy is usually maintained until puberty and then stopped
C. Seizures in children are difficult to control
D. The majority of children with seizures have abnormal neurological findings
E. Most febrile convulsions occur between one to five years of age

16. In trigeminal neuralgia:

A. The pain is constant
B. The condition occurs with equal frequency in both sexes and in all age groups
C. Carbamazepine (Tegretol) is the drug of first choice
D. The pain is unaffected by eating and talking
E. Ipsilateral corneal reflex is absent

17. Which statement is true regarding epilepsy occurring in elderly patients?

A. It is the most common cause of abrupt falls in this age group
B. The electroencephalogram is diagnostic in 90% of cases
C. The seizure episodes occur in well-defined relationship to posture or other outside circumstances
D. The seizure attacks are in the vast majority without cause
E. The eyes are usually open during seizure attacks

18. The muscles commonly affected in myasthenia are:

A. Oculobulbar
B. Sternocleidomastoidei
C. Hand muscles
D. Pelvic girdle
E. Dorsiflexors of feet

19. The therapy of choice in a newly-diagnosed myasthenia patient is:

A. Thymectomy
B. Edrophonium chloride (Tensilon)
C. Pyridostigmine bromide (Mestinon)
D. Immunosuppressant
E. Plasmapheresis

20. The m[illegible]ure to the pat[illegible] with Parkinson's disease is:

A. Sho[illegible]pectancy
B. Un[illegible]ies
C. R[illegible]
D. [illegible]ulties of gait and posture
E. [illegible]inesia

21. The [illegible]laining of paresthesias mainly in the second finger, esp[illegible]ight. There is slight atrophy of the thenar eminence and some [illegible] in the first two fingers. A nerve conduction velocity tud[illegible]ost likely confirm the diagnosis of:

A. C6-C7 radiculopathy
B. Ulnar nerve compression at the elbow
C. Ulnar nerve compression at the wrist
D. Median nerve compression at the elbow
E. Median nerve compression at the wrist

22. In the United States, the most common cause of peripheral polyneuropathy is:

A. Diabetes mellitus
B. Leprosy
C. Guillain-Barré syndrome
D. Vitamin deficiency
E. Lead intoxication

23. Anterior horn cell diseases and myopathies usually have one of the following features in common:

A. Weak or absent reflexes
B. Predominantly distal sensory involvement
C. Denervation process as shown by muscle biopsy
D. Normal serum muscle enzymes
E. Improvement by injection of Tensilon

24. Multiple sclerosis implies a dissemination in time and in space of the lesions. Initially, which of the following conditions is commonly confused with multiple sclerosis?

A. Cervical spondylarthritis
B. Guillain-Barré syndrome
C. Conversion reaction
D. Presenile dementia
E. Amyotrophic lateral sclerosis

25. How many hours/days after abstaining from drinking does delirium tremens usually occur?

A. Two hours
B. Twelve hours
C. 24-48 hours
D. Three to four days
E. One week

26. Any degree of mental disturbance can result from hypoglycemia. The neurologic symptoms will most likely begin when the blood glucose is lower than:

A. 150 mg%
B. 100 mg%
C. 75 mg%
D. 40 mg%
E. 10 mg%

27. The therapy for hyperglycemic hyperosmolar non-ketotic encephalopathy consists of administration of insulin, hypotonic/isotonic NaCl and if needed, parenteral potassium. The safest approach is to administer which of the following amounts of insulin?

A. Insulin lente 100 U., repeat as necessary
B. Insulin lente 50 U., every six hours
C. Insulin regular 100 U., repeat as necessary
D. Insulin regular 50 U., every six hours
E. Insulin regular 5 U., repeat as necessary

28. The symptoms of diarrhea, abdominal pain, palmar hyperkeratosis, ungual striae, polyneuropathy and hemorrhagic encephalopathy are seen in poisoning with:

A. Belladonna
B. Arsenic
C. Bismuth
D. Curare
E. Lead

29. An obese young woman is complaining of extremely severe headaches. There is a bilateral papilledema, no other neurologic signs, normal mental status. The CT scan is normal. The most likely diagnosis is:

A. Hysterical personality
B. Pseudotumor cerebri
C. Deeply located thalamic tumor
D. Pachymeningitis
E. Migraine

30. A patient sustained a transection of the spinal cord at the C6-C7 level. He is expected to have the following outcome:

A. The injury is usually fatal
B. Outlook for survival is good, needs continuous respiratory assistance
C. Quadriparesis, respiratory problems, able to use wheelchair
D. Normal shoulder strength and weak elbow function, cannot ambulate
E. Patient can move fairly well with the aid of crutches and braces

*

* *

Answers to Questions #1 - 30

1. D	11. E	21. E
2. C	12. D	22. A
3. B	13. B	23. A
4. A	14. B	24. C
5. A	15. E	25. C
6. D	16. C	26. D
7. D	17. E	27. E
8. C	18. A	28. B
9. A	19. C	29. B
10. B	20. E	30. D

Neurologic Examination and Localization

James Q. Miller, M.D.

The neurological examination is designed to answer three important questions--is there disease in the nervous system, where is the disease and what is the disease? To a large extent, neurological diagnosis depends upon relationships between structure and function of the brain, spinal cord, peripheral nerves and muscles. The neurological examination is very much an exercise in mystery-solving in which the examiner first detects abnormalities of neurological function, then identifies those places in the nervous system causing the observed abnormalities, and finally decides upon the disease process which can cause such deficits. Patient management is strongly influenced by the location in the nervous system of a lesion and whether its evolution is static, slowly progressive, or rapidly progressive. Neurological disorders fall into one of three categories--disease of one place in the nervous system, diseases of the nervous system as a whole organ, or disease of neurological systems or pathways.

There are many aspects of neurological function which can be elicited at the bedside but which are seldom utilized in routine patient evaluation. Although informative of the myriad functions of the body's most complex organ system, these examinations are best reserved for special circumstances, and are not noted in this syllabus. Attention here is directed towards procedures which are reliable and sufficiently succinct to permit employment in every patient suspected of having a neurological disorder. It is better to do a short examination regularly and become comfortable with it than to perform an exhaustive evaluation infrequently.

The neurological examination is conveniently performed in a sequence moving from top to bottom. From the neurological standpoint, this means starting with state of consciousness and mental ability and concluding with perineal sensation and sphincter function. Objective neurological deficits, so-called hard signs, are of greater diagnostic value than subjective abnormalities. Accordingly, it is appropriate to emphasize the motor portion of the neurological examination. A suggested sequence is as follows:

--Consciousness and mentation
--Optic fundi, pupil responsiveness, extraocular motion and visual fields
--Other cranial nerve motor functions especially facial, palate and tongue muscles
--Facial sensation