LESSON ASSIGNMENT

LESSON 4
Seizures.

LESSON ASSIGNMENT
Paragraphs 4-1 through 4-5.

LESSON OBJECTIVES
After completing this lesson, you should be able to:

4-1. Identify the causes of seizures and epilepsy.

4-2. Identify the classification and signs/symptoms of epileptic seizures.

4-3. Identify the treatment of seizure disorders.

SUGGESTION
After completing the assignment, complete the exercises of this lesson. These exercises will help you to achieve the lesson objectives.
LESSON 4

SEIZURES

4-1. INTRODUCTION

Help! Come quick! You, the 91W20, are the first person to arrive on the scene. You see an individual on the floor twitching and jerking uncontrollably. Would you know what to do? Would you know how to keep the patient from injuring himself? These questions and more will be answered in this lesson.

4-2. CAUSES OF SEIZURES AND EPILEPSY

Epilepsy is one of the most common and yet puzzling disorders of the central nervous system. Epilepsy is a condition of the brain characterized by sudden, brief attacks of altered consciousness, motor activity, sensory phenomena, or inappropriate behavior. The term seizure refers to a convulsion or an attack of epilepsy. About half the cases of epilepsy result from unknown causes. Possible causes of the other half of the epilepsy cases include the following:

a. Disorder of the Brain. An underlying disorder of the brain which could be structural, chemical, physiological, or a combination of all three.

b. Genetic Association Indicated by Family History. A study can be made of other family members to see how many have had epilepsy and/or seizures.


d. Perinatal Factors. Birth trauma and asphyxia neonatorum are important causes of brain damage leading to epilepsy.

e. Infectious Diseases. Convulsions may accompany any acute infection of the nervous system. An inflammatory process causing brain damage may cause convulsions.

f. Toxic Factors. Lead poisoning, alcohol, and drugs can cause seizures. Lead poisoning is most dangerous in children aged one to three years. The chronic alcoholic is liable to have seizures, and drugs such as amphetamines can cause seizures.

g. Trauma and Physical Agents. Cerebral injuries, anoxia (cardiac arrest or near drowning), and hyperthermia (secondary to excessive environmental temperatures and dehydration).
h. Circulatory Disturbances. Vascular disorders that interfere with cerebral circulation causing neuronal anoxia will cause a seizure. Examples of such vascular disorder include hemorrhage, embolus, or thrombosis.

i. Neoplasms. These are new and abnormal formations of tissue such as a tumor or growth.

4-3. CLASSIFICATION OF EPILEPTIC SEIZURES

Types of epileptic seizures you are most likely to encounter include the following:

a. Petit Mal Seizures. The tendency to this type of seizure is usually inherited. The classic petit mal seizure (also called absence seizure) is characterized by three phases: a sudden vacant expression or stare; stopping any motor activity (akinetic seizure); and myoclonic jerks (contraction and relaxation of muscles) with or without loss of muscle tone. These seizures are very brief (lasting from one to three seconds), and the individual may have as many as 100 of these seizures a day. These seizures are so brief that often the person looks like he is daydreaming or staring. His eyelids may flutter rapidly. Immediately after his attack, the individually returns to his normal activity. The episode is so brief that often neither the patient nor those around him notice anything unusual. The seizure may occur with or without loss of muscle tone. The person's eyes may rotate upward briefly, and he may blink his eyes. His head may droop but rarely fall. Fingers and hands may contract and relax. Usually, he is not incontinent. Petit mal seizures occur mainly in children from three to ten years of age. Such seizures almost never occur in anyone over age 20. If such a seizure does occur, it indicates the presence of organic brain disease. A child with this type of seizure may have grand mal epilepsy as he grows older.

b. Focal Seizures. These seizures are also called Jacksonian seizures, simple seizures, and partial seizures. Motor, sensory, or autonomic functions may be affected. The part or parts of the body affected indicate the particular place in the cerebrum where a lesion is located, the lesion causing the seizure. The seizures are localized or on only one side of the body. The person's head and eyes may turn to one side. Jerking limbs will be on only one side of the body. If the seizure progresses to a generalized convulsion, the person may become unconscious, and the attack may develop into a full grand mal seizure.

c. Grand Mal Seizures. This type of seizure (also called generalized seizure, major seizure, and tonic-clonic seizure) usually lasts two to three minutes but may last as long as ten to fifteen minutes. A person may suffer a grand mal seizure and a petit mal seizure at the same time. There are four phases to a grand mal seizure: the prodromal phase, the tonic phase, the clonic phase, and the postictal phase.
(1) **Prodromal phase.** In this phase, 50 percent of the patients experience an aura, that is a particular sensation described as an odd or unpleasant sensation rising from the stomach toward the chest and throat; that is a kind of premonition before the seizure occurs. The individual cries out (a respiratory muscle has a spasm) and loses consciousness, falling to the ground. **NOTE:** Some patients experience the same aura before each seizure. The aura may cause numbness or motor activity such as turning the head and eyes or the spasm of a limb. The aura may be a peculiar sound or baste or a memory from the past.

(2) **Tonic phase.** This phase is characterized by continuous body tension. There is a sustained contraction of all muscles in the body; the body is rigid with fixed jaws, hands clenched, and legs extended. The person's face may be red or cyanotic due to a spasm of the respiratory muscle. His pupils are dilated, corneal and deep tendon reflexes are absent, and the Babinski sign is positive.

(3) **Clonic phase.** The person's muscles alternately contract and then relax rapidly. The phase follows the tonic phase in less than a minute. The individual's jerky movements are caused by the alternating contractions and relaxation of his muscles (myoclonic jerking of arms and legs and/or the body trunk). Frothing at the mouth, loss of bladder and bowel control, tongue biting, bruises, and contusions commonly occur during this phase.

(4) **Postictal phase.** The clonic convulsive phase gradually subsides. The fourth phase characterized by a deep sleep with gradual recovery. When the person awakens, he may be confused, tired, have muscle soreness, and a headache. Encourage him to rest because activity could bring about another attack.

d. **Status Epilepticus.** Status epilepticus is a medical emergency and is a series of seizures that occur in rapid succession with no intervening periods of consciousness. A **grand mal status epilepticus** may persist for hours or days resulting in a coma. The coma may be fatal due to hyperthermia (very high body temperature) and exhaustion. If any seizure lasts over ten minutes, the seizure is considered status epilepticus and, therefore, a medical emergency. The cause of status epilepticus is often the result of improper drug therapy for epilepsy. This condition can also occur spontaneously.

e. **Psychomotor Seizures.** These are seizures that do not adhere to the classic criteria of the grand mal, focal, or petit mal seizures. Characteristics of psychomotor seizures include the following:

(1) The individual loses contact with his environment for one to two minutes.

(2) He does not fall, but he may stagger around performing automatic purposeless movements. Also, he may utter unintelligible sounds, turn his head or eyes, smack his lips, rub his hair, or rub his face.
(3) He does not understand what is said, and he resists help.

(4) He is mentally confused for another one to two minutes after the seizure seems to be over.

(5) Following the seizure, the individual usually does not remember what he did during the attack.

(6) Psychomotor seizures may develop at any age and are usually associated with structural lesions of the temporal lobe of the brain.

f. **Hysterical Attacks.** This condition may resemble grand mal epilepsy. Characteristics of the attack include the following:

(1) The attack begins slower, and the person's movements are purposeful.

(2) He experiences no tongue biting or incontinence.

(3) He remains conscious.

(4) If and when he falls, he does not usually injure himself.

(5) He may resist help, and the "convulsion" may be erratic and atypical (unusual and not typical of seizures).

(6) The patient usually has a history of emotional upset and neurosis.

4-4. **TREATMENT OF SEIZURE DISORDERS**

a. **General Principles.** Included are the following:

(1) Encourage the person to lead a normal life with social activities.

(2) Recommend moderate exercise with proper safeguards; for example, swimming and horseback riding.

(3) Automobile driving after one year has passed since the last seizure.

(4) No alcoholic beverages.

(5) The individual's family should use their common sense and guard against overprotecting him and being overly sympathetic. The family should suggest that the person enter vocational rehabilitation and join a local interest group such as the Epilepsy Foundation of America. They should encourage the person to take his medication regularly and to carry an identification card stating that he is an epileptic.
b. **Initial Aid to a Seizure Patient.** Although seizures are rarely life-threatening, good management techniques can help the patient. Follow these guidelines:

- (1) Prevent the person from injuring himself. To keep him from biting his tongue or the inside of his mouth, place a tongue depressor, handkerchief, or padded gag between his teeth.

  **CAUTION:** DO NOT cram anything in the person's mouth, and be careful with your fingers.

- (2) DO NOT restrain the person.

- (3) DO NOT leave him alone.

- (4) Loosen his clothing, especially clothing around his neck, and place a pillow under his head.

- (5) Turn his head to the side after the seizure activity. This will allow mucus to flow out of his mouth.

- (6) DO NOT give him drugs during the attack except for treatment of status epilepticus. Drugs could delay the completion of the attack.

- (7) Be careful not to overreact or overtreat the person.

- (8) If necessary, arrange for the person to be hospitalized.

c. **Recording and Reporting Seizures.** Follow this procedure:

- (1) **Record personal observations of the patient.** Be accurate in your description of details.

- (2) **Record circumstances preceding the attack.** Record what the patient told you and what he did. Also, record statements of what he did from witnesses.

- (3) **Record exact sequence of seizure symptoms.** Be sure to include:
  
  (a) Where on the body did the seizure start?

  (b) Was the seizure local or generalized?

  (c) How long did the seizure last? Include the total time and the time of each phase of the seizure.

  (d) List symptoms that were noticed during the seizure; for example, incontinence, cyanosis, pupil changes, etc.
(4) **Laboratory findings.** An electroencephalogram (EEG) is the most important test in the study of epilepsy. Drugs, photic stimulation, sleep, and hyperventilation may be of diagnostic value. Include skull x-rays, CSF studies, GTTs, CT scan of the head, cerebral angiograms, and brain stems.

(5) **Drug therapy principles.** No single drug is effective for all types of seizures. The person may require several drugs. Begin treatment with the smallest effective dose and increase the dosage until the seizures are controlled or until the person experiences side effects from the drugs. Monitor the person's blood level of anticonvulsants. For some reason, children often need and tolerate much larger doses of medication than their age and weight would indicate. Never withdraw anticonvulsant drugs suddenly. Continue medications for at least five seizure-free years. Alcoholics experiencing seizures are not helped by anticonvulsant drugs or are of little value.

(6) **Medications for specific types of seizures.**

(a) Grand mal-focal--psychomotor seizures. The drug of choice for control of frequent seizures is Dilantin® (phenytoin sodium). Watch for side effects. Possible side effects include gum hypertrophy, nervousness, rash, ataxia, drowsiness, and nystagmus (involuntary rapid movements of the eyeball). When this medication is given intravenously, monitor the person's blood pressure every five minutes. Another drug which can be given is phenobarbital.

(b) Status epilepticus. Give one of the following drugs slowly:

1. Valium® (diazepam).
2. Dilantin® (phenytoin sodium).
3. Phenobarbital sodium.
4. Amytal® (amobarbital sodium).
5. Intractable cases may require general anesthesia.

4-5. **CLOSING STATEMENT**

Remember, when you arrive on the scene of an individual having a seizure, your quick thinking and management of the situation may very well make all the difference in the recovery of the patient. Your report on the circumstances of the incident will aid the doctor in his diagnosis and result in quicker treatment for the patient.
EXERCISES, LESSON 4

INSTRUCTIONS. The following exercises are to be answered by writing the answer in the space provided. After you have completed all the exercises, turn to Solutions to Exercises at the end of the lesson and check your answers.

1. Epilepsy is _____________________________________________________________

2. What does the term seizure refer to? Seizure refers to: __________________________

3. List three toxic substances that can cause seizures.
   a. ____________________________________________.
   b. ____________________________________________.
   c. ____________________________________________.

4. Neoplasms, a cause of epilepsy, are __________________________________________

5. List the characteristic three phases of the classic petit mal seizure.
   a. ____________________________________________.
   b. ____________________________________________.
   c. ____________________________________________.
6. Seizures which are localized, affecting only one side of the body are called Jacksonian seizures. Other names for these seizures are simple seizures, partial seizures, and ______________ seizures.

7. List the four phases of the grand mal seizure.
   a. __________________ __________________________.
   b. __________________ __________________________.
   c. __________________ __________________________.
   d. __________________ __________________________.

8. The phase of the grand mal seizure in which the muscles of the body are very tense is the ______________ phase.

9. A series of epileptic seizures which occur in rapid succession with no intervening periods of consciousness is a medical emergency and is called ______________ __________________________.

10. In a ______________ seizure, the individual may lose contact with his environment for only one or two minutes and usually does not remember what he did during the seizure.

11. A ______________ attack resembles grand mal epileptic attack with some exceptions including these: the person remains conscious, he experiences no tongue biting, and he does not injure himself when he falls.
12. List four things you would NOT do when giving initial aid to a seizure patient.
   a. _____________________________________________________________________
   b. _____________________________________________________________________
   c. _____________________________________________________________________
   d. _____________________________________________________________________

13. The most important test in the study of epilepsy is _________________.

14. A seizure patient should continue taking his medications for ________________ after the last seizure.

   Check Your Answers on Next Page
SOLUTIONS TO EXERCISES, LESSON 4

1. A chronic, neurologic disease marked by sudden loss of consciousness and frequently by convulsions. (para 4-2)

2. Seizure refers to a convulsion or an attack of epilepsy. (para 4-2)

3. Lead.
   Alcohol.
   Drugs. (para 4-2f)

4. New and abnormal formations of tissue such as a tumor or growth. (para 4-2i)

5. Sudden vacant expression or stare.
   Stopping of motor activity.
   Loss of muscle tone. (para 4-3a)

6. Focal. (para 4-3b)

7. Prodromal phase.
   Tonic phase.
   Clonic phase.
   Postictal phase. (paras 4-3c(1) through (4))

8. Tonic. (para 4-3c(2))

9. Grand mal status epilepticus. (para 4-3d)

10. Psychomotor. (para 4-3e)

11. Hysterical. (para 4-3f)

12. DO NOT cram anything in the person's mouth.
    DO NOT restrain the person.
    DO NOT leave him alone.
    DO NOT give him drugs. (paras 4-4b(1) through (8))

13. An electroencephalogram (EEG). (para 4-4c(4))

14. 5 years. (para 4-4c(5))

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