

1. The molecular defect in Duchenne muscular dystrophy resides in _____.
 - A. a large, plasma membrane-associated protein
 - B. a key calcium-transport molecule
 - C. a mitochondrial electron transport chain protein
 - D. a metabolic enzyme involved in glycolysis
 - E. contractile protein interactions

2. Wallerian degeneration _____.
 - A. is seen in oligodendroglia
 - B. is a paraneoplastic syndrome
 - C. involves distal axonal degeneration
 - D. is the destruction of myelin sheaths

3. A 62-year-old woman had an acute myocardial infarction. Right after arriving at the emergency room, she had cardiac arrest. Resuscitation efforts for 15 minutes were successful and she was admitted to the intensive care unit (ICU). However, she developed a fatal arrhythmia and died on her third day in ICU. Autopsy was performed. This picture of brain tissue shows:
 - A. viral inclusions
 - B. reactive astrocytes
 - C. normal white matter
 - D. normal cortical gray matter
 - E. eosinophilic neuronal necrosis

4. While walking home after a party where he consumed five cans of beer, a 28-year-old man fell and hit his head on the curb. He got up and went home. An hour later, he became unconscious and was brought to the emergency room by his roommate. Initial physical exam showed a severe contusion of the left temporal area. The most likely explanation for his condition is rupture of the _____.
 - A. left middle meningeal artery
 - B. left middle cerebral artery
 - C. anterior communicating artery aneurysm
 - D. bridging dural veins
 - E. posterior cerebral artery

5. A 29-year-old man was found dead in the street. Autopsy showed hemorrhage under the occipital scalp, and contusions of both occipital poles. Which of the following is the most likely explanation?
 - A. metastatic lung cancer secondary to heavy smoking
 - B. intracranial hemorrhage secondary to hypertension
 - C. slipped and fell on his back, hitting his head to concrete pavement
 - D. he was previously strangled to death and later the body was dumped in a remote street, at which time his head hit the concrete pavement
 - E. he was hit on the back of his head by a baseball bat

6. A 65-year-old woman presents to the hospital with progressive neurological deficits. Several months earlier she had received treatment for a brain tumor. A new brain biopsy shows no tumor, but does show necrosis of cerebral vasculature and of brain tissue. The most likely cause of these findings is previous therapy with:

- A. isoniazid
- B. dehydration
- C. mercury
- D. radiation
- E. vincristine

7. Which of the following is true regarding the pathological process seen in this picture?

- a. Pathological hallmark is the presence of numerous intranuclear inclusions
- b. It is a movement disorder characterized by ataxia
- c. Intracytoplasmic alpha-synuclein-positive neuronal inclusions are diagnostic (correct)
- d. The majority of patients also have dementia
- e. A specific muscle pathology is the cause of the movement disorder

8. A 26-year-old man presents to clinic with weakness in his right arm. Two years previously he had an episode of difficulty speaking that improved considerably after several days. One year before that he had an episode of decreased vision in his left eye that did not resolve. He has no other known medical illnesses or conditions. The most likely cause of these episodes is:

- A. accumulation of amyloid deposits in the brain
- B. an inborn metabolic error of sphingolipid metabolism
- C. chronic arsenic poisoning
- D. episodes of brain myelin destruction by macrophages
- E. viral infection of oligodendrocytes

9. Perivenous encephalomyelitis is thought to result from _____.

- A. an autoimmune attack on central nervous system myelin
- B. exposure to canine distemper virus
- C. inappropriate astrocytic expression of major histocompatibility antigens
- D. a neurotoxin elaborated by an anaerobic bacillus
- E. a systemic vasculopathy

10. Examine the gross photograph of a brain from a newborn child, taken from the posterior. The abnormality shown here results from a failure of:

- a. neural tube formation
- b. organogenesis (correct)
- c. neuroblast migration
- d. aqueductal patency
- e. myelination

Notes for question set:¹

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