Primary Central Nervous System Neoplasms: Review Questions

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QUESTIONS

Choose the single best answer for each question.

1. **Which of the following is the most common primary central nervous system (CNS) tumor in adults?**
   A) Oligodendroglioma
   B) Medulloblastoma
   C) Ependymoma
   D) Glioblastoma
   E) Primary central nervous system lymphoma (PCNSL)

2. **Nonmalignant primary brain tumors include all of the following EXCEPT:**
   A) Pilocytic astrocytoma
   B) PCNSL
   C) Neurocytoma
   D) Ganglioglioma
   E) Meningioma

3. **Which of the following tumors has (have) the best prognosis?**
   A) Anaplastic astrocytoma
   B) Glioblastoma
   C) Meningioma
   D) PCNSL
   E) Meningioma and PCNSL

4. **Primary CNS tumors that have been shown to be particularly sensitive to chemotherapy include:**
   A) Glioblastoma
   B) Anaplastic astrocytoma
   C) PCNSL
   D) Oligodendroglioma
   E) PCNSL and oligodendroglioma

5. **Which of the following tumors is (are) most likely to spread throughout the neuraxis?**
   A) Glioblastoma
   B) Anaplastic astrocytoma
   C) Medulloblastoma
   D) Ependymoma
   E) Medulloblastoma and ependymoma

6. **Definitive diagnosis of radiation necrosis requires:**
   A) Surgical biopsy
   B) Positron emission tomography (PET)
   C) Thallium single photon emission computed tomography (SPECT)
   D) Assessment of cerebrospinal fluid
   E) All of the above

7. **A sensorimotor neuropathy is associated with the use of which of the following agents?**
   A) Carmustine (BCNU)
   B) Procarbazine
   C) Cytarabine (ara-C)
   D) Vincristine
   E) All of the above

8. **The primary laboratory test(s) that must be monitored in patients receiving radiotherapy is (are):**
   A) Complete blood count
   B) Electrolyte levels
   C) Liver function tests
   D) All of the above
   E) None of the above

(turn page for answers)

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EXPLANATION OF ANSWERS

1. **(D) Glioblastoma.** Gliomas are the most common primary CNS tumors, comprising approximately 60% of all primary CNS neoplasms. The most malignant and common form of glioma, the glioblastoma, represents 50% to 60% of diagnosed gliomas. Oligodendroglioma occurs in approximately 5% of all cases, and medulloblastoma and ependymoma occur in fewer than 1% of adult patients. However, these latter two tumors are much more common in the pediatric population, with medulloblastoma being one of the most frequently diagnosed brain tumors in children. PCNSL is a rare tumor, but this tumor is the most common CNS malignancy in the population of patients with AIDS and is the fourth leading cause of death in this patient population.
2. **(B) PCNSL.** PCNSL is considered a malignant lymphoma of the brain and is typically a B-cell tumor. Although the prognosis is better for this tumor than for some of the other glial-based neoplasms, it is clearly still malignant with a median survival of less than 4 years. In contrast, the other tumors are benign; they are typically treated only with resection, requiring no adjuvant radiation or chemotherapy.
3. **(C) Meningioma.** Compared with anaplastic astrocytoma, glioblastoma, and PCNSL, meningioma has the best prognosis. These tumors only rarely spread, are slow growing, and are associated with limited recurrence rates after surgery. Most patients with meningioma do not require any further therapy for uncomplicated removal.
4. **(E) PCNSL and oligodendroglioma.** Both PCNSL and oligodendroglioma have been shown to be responsive to chemotherapy, and prolonged remissions occur with such treatment alone. Although glioblastoma and anaplastic astrocytoma do respond to chemotherapy, the addition of cytotoxic drugs to radiotherapy and surgery only increases survival by several months.
5. **(E) Medulloblastoma and ependymoma.** The glial-based neoplasms (glioblastoma and anaplastic astrocytoma) do not typically metastasize into the cerebrospinal fluid; however, medulloblastoma and ependymoma can either present or recur in this manner.
6. **(A) Surgical biopsy.** Only surgical biopsy provides the definitive diagnosis for radiation necrosis. PET and SPECT are associated with relatively low sensitivity, and analysis of cerebrospinal fluid has no current role in the detection of radiation necrosis.
7. **(D) Vincristine.** Vincristine (whose mechanism of action involves the cytoskeleton assembly system of the cell) causes a predictable sensorimotor neuropathy, which improves with drug discontinuation. The drug also causes musculoskeletal aches that may be prolonged after discontinuation of the therapy but that typically remit after weeks to months.
8. **(E) None of the above.** Radiotherapy does not require monitoring of complete blood count, electrolyte levels, or liver function tests. However, radiation does require close monitoring of the results of neurologic examination because treatment toxicity may lead to transient worsening of symptoms and the need for low-dose dexamethasone treatment.

Adapted from Liang BC: Primary central nervous system neoplasms. Hospital Physician Neurology Board Review Manual *1999:4(1).*

NEUROLOGY

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