



# Cerebral Ventricle: Vascular Lesions and Hemorrhage

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1. **Intraventricular hemorrhage (IVH), etiologies, the FALSE answer is:**
- A. Most occur because of the extension of intraparenchymal hemorrhages.
  - B. Can result in a rupture of the aneurysm.
  - C. SAH refluxing into the ventricles through foramina of Luschka or Magendie.
  - D. In adults, it is an extension of subependymal hemorrhage.
  - E. Can be associated with severe head trauma.

✓ **Answer D**

- Extension of subependymal hemorrhage into ventricles is a common type of IVH in newborns.

2. **Pure or isolated IVH can result from, the FALSE answer is:**

- A. Ruptured AcommA aneurysm.
- B. Putaminal hemorrhages.
- C. Vertebral artery dissection.
- D. Intraventricular AVM.
- E. Intraventricular tumor.

✓ **Answer B**

- IVH with putaminal hemorrhages is an example of the extension of intraparenchymal hemorrhages known as secondary IVH. Primary or pure IVH is confined only to the ventricles.

3. **IVH with ruptured aneurysm, the FALSE answer is:**

- A. Ruptured aneurysm accounts for  $\approx 25\%$  of IVH in adults.
- B. Carotid terminus aneurysms may rupture through the floor of the third ventricle.
- C. Carry the same prognosis of SAH without IVH.
- D. AcommA aneurysm can rupture through the lamina terminalis into the anterior third ventricle.
- E. Distal PICA aneurysms: may rupture directly into fourth ventricle through the foramen of Luschka.

✓ **Answer C**

- Carry a worse prognosis (64% mortality).

4. **IVH, presentation, the FALSE answer is:**

- A. Sudden onset of severe headache.
- B. Nausea and vomiting.
- C. Decreased level of consciousness.
- D. Seizures are very common.
- E. Neurological deficit.

✓ **Answer D**

- Clinical seizures are uncommon but have been reported in IVH.

? **5. IVH, diagnosis, the FALSE answer is:**

- A. MRI was performed immediately in suspected IVH.
- B. MRI SWI is more sensitive for IVH than traditional GRE sequences.
- C. CTA indicated in any patient <50–60 yrs.
- D. MRI is more sensitive than CT to very small amounts of blood, especially in the posterior fossa.
- E. Routine catheter angiography in the setting of primary IVH is warranted.

✓ **Answer A**

- Brain MRI is not highly sensitive in the first few hours while non-contrast CT is the mainstay of acute evaluation of patients suspected with IVH showed increased density ( $\approx 30\text{--}80$  HU).

? **6. IVH, general management, the FALSE answer is:**

- A. ICU admission, elevating the head of bed, analgesia, mild sedation, MANNITOL.
- B. Antiepileptic drug (AED) prophylaxis is controversial.
- C. BP control target SBP < 110 mmHg.
- D. Small hematomas and limited IVH usually do not need ICP treatment.
- E. Early intensive lowering of BP does not result in a significant reduction of death or major disability but improves functional outcomes.

✓ **Answer C**

- Target SBP < 140 mmHg, keep MAP 70–110 mmHg.

? **7. IVH, surgical treatment, the FALSE answer is:**

- A. Ventricular drainage as a treatment for hydrocephalus is reasonable, especially if decreased level of consciousness.
- B. Endoscopic neurosurgical techniques for IVH evacuation may be advantageous compared with EVD.
- C. CLEAR (Clot Lysis Evaluating Accelerated Resolution of IVH) III trial suggests that rtPA may be effective in reducing the volume of IVH.
- D. Ventricular drainage is recommended in IVH associated with cerebellar hematoma.
- E. Chronic hydrocephalus following IVH can be treated by VP shunt.

✓ **Answer D**

- EVD has a risk of upward herniation of cerebellum hemorrhage with IVH and does not relieve brainstem compression. Initial treatment with ventricular drainage rather the surgical evacuation is not recommended.

? **8. IVH, prognosis, the FALSE answer is:**

- A. Patient age is considered as an important prognostic factor.
- B. Patients with lower Graeb scores were associated with better clinical conditions.
- C. A smaller volume of IVH is favorable.
- D. The development of hydrocephalus carries a poor prognosis.
- E. Secondary IVH showed a better prognosis than primary.

✓ **Answer E**

- The outcome of patients with primary IVH is better than those with secondary IVH.

? **9. Intraventricular hemorrhage in newborn (IVH-n), alternate terms, the FALSE answer is:**

- A. Subependymal hemorrhage.
- B. Germinal matrix hemorrhage.
- C. Periventricular- IVH.
- D. Choroid plexus hemorrhage.
- E. Neonatal IVH.

✓ **Answer D**

- Choroid plexus hemorrhage can result in IVH, but not a term of IVH-n.

? **10. IVH-n, pathogenesis, the FALSE answer is:**

- A. Birth asphyxia.
- B. Hypercapnia.
- C. Increased systematic venous pressure.
- D. Hypertension.
- E. Rapid i.v. resuscitation.

✓ **Answer D**

- Hypotension and hypoperfusion.

? **11. IVH-n, anatomy of the germinal matrix, the FALSE answer is:**

- A. Located in the thick subependymal cell layer of the thalamostriate groove.
- B. Vulnerable watershed zone.

- C. Origin to both neural and glial cells.
- D. Progressive involution until 36 weeks.
- E. Supplied by terminal branches of posterior cerebral arteries.

✓ **Answer E**

- Supplied by Heubner's artery, terminal branches of the lateral striate arteries, and the anterior choroidal artery.

? **12. IVH-n, risk factors, the FALSE answer is:**

- A. Young gestational age.
- B. Increase CPP.
- C. Coagulopathy.
- D. Maternal cocaine use.
- E. Macrosomia.

✓ **Answer E**

- Low birth weight considers an important risk factor.

? **13. IVH-n, incidence, the FALSE answer is:**

- A. More in male.
- B. Low birth weight in 25%.
- C. Mortality rate 10%.
- D. Bimodal distribution.
- E. Mortality correlated to gestational age.

✓ **Answer C**

- Mortality can reach 55%.

? **14. IVH-n, prevention, the FALSE answer is:**

- A. Regular prenatal care.
- B. Avoid preterm labor.
- C. Avoid corticosteroid.
- D. Indomethacin.
- E. Surfactant.

✓ **Answer C**

- Antenatal corticosteroid administration used for prevention.

? **15. IVH-n, papile grading, the FALSE answer is:**

- A. Grade I: Hemorrhage restricted to subependymal region.
- B. Grade II: IVH without ventricular dilatation.
- C. Grade III: IVH with ventricular dilatation.
- D. Grade IV: IVH with parenchymal hemorrhage.
- E. Grade V: IVH with SAH.

✓ **Answer E**

- The grading system for primary IVH is four grades only.

⊙ **16. IVH-n, papile grading, the FALSE answer is:**

- A. Grade I: seen in the 7 **caudothalamic groove**.
- B. Grade II: poor prognosis.
- C. Grade III: 20% mortality.
- D. Grade IV: 36% mortality.
- E. Grade IV: secondary to hemorrhagic infarction.

✓ **Answer B**

- Grade II overall good prognosis.

⊙ **17. IVH-n, presentation, the FALSE answer is:**

- A. Flaccid paralysis.
- B. Subclinical seizures.
- C. Depressed fontanelle.
- D. Hypotension.
- E. Unreactive pupils.

✓ **Answer C**

- Tense fontanelle.

⊙ **18. IVH-n, hydrocephalus, the FALSE answer is:**

- A. 50% of infants.
- B. More in Grade I.
- C. Young gestational age infants may be at higher risk.
- D. Occurs 1 week after hemorrhage.
- E. Most cases are due to cellular debris.

✓ **Answer B**

- Grades III and IV are more often associated with progressive ventricular dilatation than are lower grades.

⊙ **19. IVH-n, general measures, the FALSE answer is:**

- A. Maintaining normal MAP.
- B. Normalizing pCO<sub>2</sub>.
- C. Treating active hydrocephalus.
- D. Daily LPs if needed.
- E. Diuretic therapy.

✓ **Answer E**

- Furosemide and acetazolamide therapy are not safe and not effective in treating post-hemorrhagic ventricular dilatation.

? 20. IVH-n, intervention includes, the FALSE answer is:

- A. Lumbar drain.
- B. Lumbar puncture.
- C. Ventricular tap.
- D. Temporary ventricular access device.
- E. VP shunt.

✓ Answer A

? 21. Intracranial aneurysms, associated IVH, the FALSE answer is:

- A. The frontal horn hemorrhage and rupture of PcommA aneurysm.
- B. Third ventricle and rupture of AcommA aneurysm.
- C. Third ventricle and rupture of carotid terminus aneurysm.
- D. Fourth ventricle and rupture of PICA aneurysm.
- E. Lateral ventricle and rupture of AcommA aneurysm.

✓ Answer A

- Ruptured PcommA aneurysm will cause carotid cistern, optic cistern, and sylvian cistern SAH; also, it can cause a subdural hematoma.

? 22. Intraventricular vascular lesions includes the following, the FALSE answer is:

- A. AVM.
- B. Cavernoma.
- C. Carotid-cavernous fistula.
- D. Telangiectasia.
- E. Venous angiomas.

✓ Answer C

? 23. Intraventricular vascular lesions, characteristics, the FALSE answer is:

- A. No sex predominance.
- B. Common in adults.
- C. Third ventricle most common site.
- D. Mimic tumor on radiology.
- E. Associated with congenital anomalies.

? The answer is C.

- The lateral ventricle is the most frequent origin, followed by the third ventricle.

**? 24. Intraventricular aneurysms, characteristics, the FALSE answer is:**

- A. Presented with isolated IVH.
- B. Giant aneurysms.
- C. The first option for management is endovascular.
- D. Very rare.
- E. Good prognosis.

**✓ Answer B**

- Intraventricular aneurysms are frequently very small (<5 mm diameter).

**? 25. Intraventricular Cerebral Cavernomas (IVCs), characteristics, the FALSE answer is**

- A. Occur in Only 2–10% of Patients with Cerebral Cavernomas
- B. It Is Genetically Inherited Disorder
- C. Good prognosis.
- D. Equally in Males and Females
- E. Almost all Patients Presented with an Acute Headache on Admission

**✓ Answer B**

- Reports concerning IVC are scarce and are limited mostly to sporadic case reports.

**? 26. (IVCs), characteristics, the FALSE answer is**

- A. The Mean Age of the Patients Is 36.5 Years
- B. Can Be Presented by IVH
- C. The most Frequent Location Is the Fourth Ventricle
- D. Complete Surgical Resection Is the Treatment of Choice
- E. The Microsurgical Approach Is Currently Considered the Gold Standard for IVC Resection

**✓ Answer C**

- The most frequent location is the lateral ventricle about 52.6%.