1. A reticulin-stained section of a 0.8-cm pituitary tumor removed by transsphenoidal resection is shown in this photomicrograph. If functioning, which of the following is the most common clinical presentation of this tumor?
   A. Acromegaly/gigantism
   B. Cushing syndrome
   C. Hyperprolactinemia
   D. Panhypopituitarism
   E. Visual field deficits

2. A 23-year-old female undergoes transsphenoidal resection of a prolactinoma after receiving prolonged treatment with bromocriptine. Which of the following are morphologic effects of bromocriptine on the pituitary tumor?
   A. Apoplexy
   B. Chronic inflammation
   C. Increase in cellular atypia
   D. Necrosis of pituitary parenchyma
   E. Shrinkage and fibrosis

3. An intracranial tumor characteristic of childhood is shown in this photomicrograph. This tumor is most likely to arise in which of the following regions?
   A. Cribriform lamina of ethmoid
   B. Petrous portion of temporal bone
   C. Posterior fossa

4. A 9-year-old girl is diagnosed with central diabetes insipidus. An MRI of the head reveals a nodular lesion in the suprasellar region. This is biopsied. The biopsy reveals the changes shown in this photomicrograph. The abnormal cells in the epithelioid clusters are immunoreactive for CD1a and S100. Which of the following is the most likely diagnosis?
   A. Granular cell tumor
   B. Langerhans cell histiocytosis
   C. Lymphocytic hypophysitis
   D. Mycobacterial infection
   E. Sarcoidosis
5. Three months after an uncomplicated delivery, a 35-year-old woman presents with signs and symptoms of pituitary insufficiency. MRI reveals a pituitary mass, which is biopsied. The biopsy findings are shown in this photomicrograph. Which of the following is the most likely diagnosis?

A. Granulomatous hypophysitis  
B. Ischemic necrosis (Sheehan syndrome)  
C. Lymphocytic hypophysitis  
D. Pituicytoma  
E. Pituitary adenoma

6. Which of the following factors accounts for the primary form of empty sella syndrome?

A. Compression by herniated arachnoid  
B. Irradiation to sellar tumors  
C. Pituitary apoplexy  
D. Postpartum pituitary necrosis  
E. Surgical intervention
CHAPTER 12 ■ Pituitary and Sellar Region

1. Correct choice: C

PITUITARY ADENOMA—A pituitary adenoma may have sheet-like, papillary, and trabecular patterns. Typical of pituitary adenomas is the loss of the reticulin network of the normal adenohypophysis, as evident in the picture, which demonstrates a peripheral rim of compressed pituitary gland. Pituitary adenomas account for approximately 10% of intracranial neoplasms. Microadenomas measure less than 1 cm, and macroadenomas measure more than 1 cm. Functioning adenomas are usually microadenomas and become clinically apparent with an endocrine syndrome related to the specific hormone produced. In contrast, macroadenomas are usually hormonally inactive and manifest by compression of nearby structures, most commonly the optic chiasm, causing bitemporal hemianopsia (“tunnel vision”). Prolactinomas are the most frequent of functioning adenomas. Hyperprolactinemia manifests with amenorrhea-galactorrhea syndrome in women, with subtle and easily overlooked symptoms in men.

2. Correct choice: E

TREATMENT OF PROLACTINOMA WITH DOPAMINE AGONISTS—Almost 50% of all functioning pituitary adenomas secrete prolactin (growth hormone, GH, and ACTH follow in order of frequency). Prolactinomas can be treated with dopamine agonists such as bromocriptine, which inhibits prolactin secretion. Bromocriptine results in gradual shrinkage of the tumor with diffuse interstitial fibrosis, without evidence of tumor necrosis or degeneration. Because bromocriptine is not tumoricidal, the treatment is not curative. Bromocriptine has serious side effects and has been replaced by cabergoline, a well-tolerated selective D2 agonist with a long half-life. Apoplexy refers to hemorrhage within a pituitary adenoma or hypertrophic pituitary (e.g., in pregnancy), which results in rapid expansion of the pituitary gland.

3. Correct choice: D

CRANIOPHARYNGIOMA—This histologically benign tumor is thought to arise from misplaced odontogenic epithelium and is morphologically similar to adamantinoma (ameloblastoma). It develops in the suprasellar region and often contains cystic spaces and abundant calcium deposits. Children are most often affected. Histologically, it contains tongues of well-differentiated epithelium with peripheral palisading and central stellate reticulum, multifocal deposits of wet keratin (i.e., with ghost keratinized cells), and abundant calcifications. A papillary variant of craniopharyngioma tends to develop in adults and middle-aged persons. Craniopharyngiomas do not metastasize, but recur frequently after surgery.

4. Correct choice: B

LANGERHANS CELL HISTIOCYTOSIS (LCH)—LCH may present as different clinical syndromes (eosinophilic granuloma, Hand-Schüller-Christian disease, Letterer-Siwe disease) and involves the CNS in 25% of cases. The pituitary/hypothalamic region is the most frequent target, with diabetes insipidus the most common clinical presentation. Langerhans cells form granuloma-like collections and express S100, CD1a, and langerin (not CD68 as macrophages). Granular cell tumors are usually clinically silent and located in the pituitary stalk; they are composed of polygonal cells with round, peripheral nuclei and granular cytoplasm. Cerebral tuberculosis and sarcoidosis tend to affect the basal surface of the brain, producing caseating granulomas and, respectively, nonnecrotizing granulomas. Lymphocytic hypophysitis usually manifests in the postpartum period with pituitary insufficiency.

5. Correct choice: C

LYMPHOCYTIC HYPOPHYSITIS—This is a complication of pregnancy that usually manifests in the postpartum period with pituitary hypofunction. Neuroimaging may suggest a pituitary adenoma. Histologically, it is characterized by florid lymphocytic and plasmacytic infiltration, sometimes with germinal center formation, but without necrosis or granulomas. The lymphocytic population is mixed and polyclonal. Postpartum pituitary insufficiency may be caused by Sheehan syndrome, which is ischemic infarction of the pituitary gland due to prolonged hypotension during delivery. Pituicytomas are rare benign glial tumors arising from pituicytes (the specialized glial cells of the neurohypophysis). Granulomatous hypophysitis is a very rare condition that affects the anterior pituitary in adult men or...
women (no association with pregnancy); it is distinct from sarcoidosis, which preferentially involves the neurohypophysis and hypothalamus.

6. **Correct choice: A**

**EMPTY SELLA SYNDROME**—The *primary* form is due to an arachnoidal diverticulum that herniates through a defect of the sellar diaphragm and exerts a compression on the pituitary gland. Approximately 50% of adults have an incompetent sellar diaphragm, and 5% have an empty sella. Choices B through E are the most common causes of the *secondary* form. Clinical manifestations include visual deficits due to chiasmal prolapse and impaired endocrine function secondary to traction on the pituitary stalk.