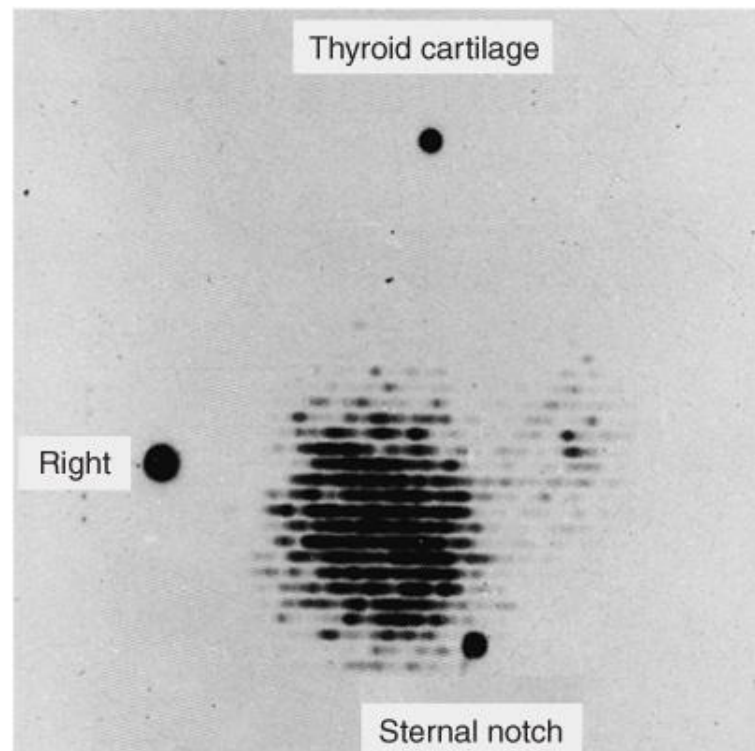


# Endocrine Problems and the Breast

## Questions

**242.** A 45-year-old woman complains to her primary care physician of nervousness, sweating, tremulousness, and weight loss. The thyroid scan shown here exhibits a pattern that is most consistent with which of the following disorders?



- a. Hypersecreting adenoma
- b. Graves disease
- c. Lateral aberrant thyroid
- d. Papillary carcinoma of thyroid
- e. Medullary carcinoma of thyroid

**243.** A patient with mild skin pigmentation is admitted emergently to your service because of sudden abdominal pain, fever, and a rigid abdomen. Her blood work indicates a marked leukocytosis, a blood sugar of 55 mg/dL, a sodium value of 119 mEq/dL, and a potassium value of 6.2 mEq/dL. Her blood pressure is 88/58 mm Hg. She undergoes an exploratory laparotomy. Which of the following is the definitive treatment for her primary condition?

- a. 10% dextrose infusion
- b. Bicarbonate
- c. Hypertonic saline
- d. Corticosteroids

e. Vasopressors

**244.** A 35-year-old woman with a history of previous right thyroidectomy for a benign thyroid nodule now undergoes completion thyroidectomy for a suspicious thyroid mass. Several hours postoperatively, she develops progressive swelling under the incision, stridor, and difficulty breathing. Orotracheal intubation is successful. Which of the following is the most appropriate next step?

- a. Fiberoptic laryngoscopy to rule out bilateral vocal cord paralysis
- b. Administration of intravenous calcium
- c. Administration of broad-spectrum antibiotics and debridement of the wound
- d. Wound exploration
- e. Administration of high-dose steroids and antihistamines

**245.** A 62-year-old woman presents with invasive ductal carcinoma of the right breast. Which of the following findings would still allow her to receive breast conservation surgery (partial mastectomy)?

- a. Diffuse suspicious microcalcifications throughout the breast
- b. Multifocal disease
- c. Previous treatment of a breast cancer with lumpectomy and radiation
- d. Large tumor relative to breast size
- e. Persistently positive margins after multiple reexcisions of the breast cancer

**246.** A 29-year-old woman presents with a 6-month history of erythema and edema of the right breast with palpable axillary lymphadenopathy. A punch biopsy of the skin reveals neoplastic cells in the dermal lymphatics. Which of the following is the best next step in her management?

- a. A course of nafcillin to treat the overlying cellulitis and then neoadjuvant chemotherapy for breast cancer
- b. Modified radical mastectomy followed by adjuvant chemotherapy
- c. Modified radical mastectomy followed by hormonal therapy
- d. Combined modality chemotherapy and radiation therapy to the right breast with surgery reserved for residual disease
- e. Combined modality therapy with chemotherapy, surgery, and radiation

**247.** A 15-year-old otherwise healthy female high school student begins to notice galactorrhea. A pregnancy test is negative. Which of the following is a frequently associated physical finding?

- a. Gonadal atrophy
- b. Bitemporal hemianopsia
- c. Exophthalmos and lid lag
- d. Episodic hypertension
- e. Buffalo hump

**248.** A 52-year-old woman sees her physician with complaints of fatigue, headache, flank pain, hematuria, and abdominal pain. She undergoes a sestamibi scan that demonstrates persistent uptake in the right superior parathyroid gland at 2 hours. Which of the following laboratory values is most suggestive of her diagnosis?

- a. Serum acid phosphatase above 120 IU/L
- b. Serum alkaline phosphatase above 120 IU/L
- c. Serum calcium above 11 mg/dL
- d. Urinary calcium below 100 mg/day
- e. Parathyroid hormone levels below 5 pmol/L

**249.** A 53-year-old woman presents with weight loss and a persistent rash to her lower abdomen and perineum. She is diagnosed with necrolytic migrating erythema and additional workup demonstrates diabetes mellitus, anemia and a large mass in the tail of the pancreas. Which of the following is the most likely diagnosis?

- a. Verner-Morrison syndrome (VIPoma)
- b. Glucagonoma
- c. Somatostatinoma
- d. Insulinoma
- e. Gastrinoma

**250.** A 49-year-old obese man has become irritable, his face has changed to a round configuration, he has developed purplish lines on his flanks, and he is hypertensive. A 24-hour urine collection demonstrates elevated cortisol levels. This is confirmed with bedtime cortisol measurements of 700 ng/mL. Which of the following findings is most consistent with the diagnosis of Cushing disease?

- a. Decreased ACTH levels
- b. Glucocorticoid use for the treatment of inflammatory disorders
- c. A 3-cm adrenal mass on computed tomography (CT) scan
- d. Suppression with high-dose dexamethasone suppression testing
- e. A 1-cm bronchogenic mass on magnetic resonance imaging (MRI)

**251.** A 35-year-old woman presents with a lump in the left breast. Her family history is negative for breast cancer. On examination the mass is rubbery, mobile, and nontender to palpation. There are no overlying skin changes and the axilla is negative for lymphadenopathy. An ultrasound demonstrates a simple 1-cm cyst in the area of the palpable mass in the left breast. Which of the following represents the most appropriate management of this patient?

- a. Reassurance and reexamination
- b. Immediate excisional biopsy
- c. Aspiration of the cyst with cytologic analysis
- d. Fluoroscopically guided needle localization biopsy
- e. Mammography and reevaluation of options with new information

**252.** A 55-year-old woman presents with a slow-growing painless mass on the right side of the neck. A fine-needle aspiration of the nodule shows a well-differentiated papillary carcinoma. A complete neck ultrasound demonstrates a 1-cm nodule in the right thyroid without masses in the contralateral lobe or lymph node metastasis in the central and lateral neck compartments. With regards to this patient, which of the following is associated with a poor prognosis?

- a. Age
- b. Sex

- c. Grade of tumor
- d. Size of tumor
- e. Lymph node status

**253.** A 55-year-old woman presents with a 6-cm right thyroid mass and palpable cervical lymphadenopathy. Fine-needle aspiration (FNA) of one of the lymph nodes demonstrates the presence of calcified clumps of sloughed cells. Which of the following best describes the management of this thyroid disorder?

- a. The patient should be screened for pancreatic endocrine neoplasms and hypercalcemia.
- b. The patient should undergo total thyroidectomy with modified radical neck dissection.
- c. The patient should undergo total thyroidectomy with frozen section intraoperatively, with modified radical neck dissection reserved for patients with extra-capsular invasion.
- d. The patient should undergo right thyroid lobectomy followed by iodine 131 (<sup>131</sup>I) therapy.
- e. The patient should undergo right thyroid lobectomy.

**254.** A 45-year-old woman is found to have suspicious appearing calcifications in the right breast on a screening mammogram. Stereotactic biopsy of the calcifications shows lobular carcinoma in situ (LCIS). On examination both breasts are dense without palpable masses. The neck and bilateral axilla are negative for lymphadenopathy. Which of the following is the most appropriate management of this patient?

- a. Frequent self breast examinations and yearly screening mammograms
- b. Chemotherapy
- c. Radiation
- d. Right total mastectomy with sentinel lymph node biopsy
- e. Bilateral modified radical mastectomy

**255.** A 14-year-old black girl has her right breast removed because of a large mass. The tumor weighs 1400 g and has a bulging, very firm, lobulated surface with a whorl-like pattern, as illustrated here. Which of the following is the most likely diagnosis?



- a. Cystosarcoma phyllodes
- b. Intraductal carcinoma
- c. Malignant lymphoma
- d. Fibroadenoma
- e. Juvenile hypertrophy

**256.** A 53-year-old woman presents with complaints of weakness, anorexia, malaise, constipation, and back pain. While being evaluated, she becomes somewhat lethargic. Laboratory studies include a normal chest x-ray, serum albumin 3.2 mg/dL, serum calcium 14 mg/dL, serum phosphorus 2.6 mg/dL, serum chloride 108 mg/dL, blood urea nitrogen (BUN) 32 mg/dL, and creatinine 2.0 mg/dL. Which of the following is the most appropriate initial management?

- a. Intravenous normal saline infusion
- b. Administration of thiazide diuretics
- c. Administration of intravenous phosphorus
- d. Use of mithramycin
- e. Neck exploration and parathyroidectomy

**257.** Which of the following patients with primary hyperparathyroidism should undergo parathyroidectomy?

- a. A 62-year-old asymptomatic woman
- b. A 54-year-old woman with fatigue and depression
- c. A 42-year-old woman with a history of kidney stones
- d. A 59-year-old woman with mildly elevated 24-hour urinary calcium excretion
- e. A 60-year-old woman with mildly decreased bone mineral density measured at the hip of less than 2 standard deviations below peak bone density

**258.** A 45-year-old woman presents with hypertension, development of facial hair, and a 7-cm

suprarenal mass. Which of the following is the most likely diagnosis?

- a. Myelolipoma
- b. Cushing disease
- c. Adrenocortical carcinoma
- d. Pheochromocytoma
- e. Carcinoid

**259.** A 36-year-old woman presents with palpitations, anxiety, and hypertension. Workup reveals a pheochromocytoma. Which of the following is the best approach to optimizing the patient preoperatively?

- a. Fluid restriction 24 hours preoperatively to prevent intraoperative congestive heart failure
- b. Initiation of an  $\alpha$ -blocker 24 hours prior to surgery
- c. Initiation of an  $\alpha$ -blocker at 1 to 3 weeks prior to surgery
- d. Initiation of a  $\beta$ -blocker 1 to 3 weeks prior to surgery
- e. Escalating antihypertensive drug therapy with  $\beta$ -blockade followed by  $\alpha$ -blockade starting at least 1 week prior to surgery

**260.** A 33-year-old pregnant woman notices a persistent, painless lump in the left breast. On examination the left breast has a single mobile mass without evidence of skin changes or lymphadenopathy in the neck or axilla. An ultrasound demonstrates a solid, 1-cm mass in the upper outer quadrant of the breast. A core-needle biopsy shows invasive ductal carcinoma. The patient is in her first trimester of pregnancy. Which of the following is the most appropriate management of this patient?

- a. Termination of the pregnancy followed by modified radical mastectomy
- b. Immediate administration of chemotherapy followed by modified radical mastectomy after delivery of the baby
- c. Administration of radiation in the third trimester followed by modified radical mastectomy after delivery of the baby
- d. Total mastectomy with sentinel lymph node biopsy
- e. Modified radical mastectomy

**261.** A 40-year-old woman presents with a rash involving the nipple-areola complex for the last month with associated itching. On physical examination there is crusting and ulceration of the nipple with surrounding erythema involving the areola and surrounding skin, no palpable breast masses, and no cervical or axillary lymphadenopathy. Which of the following is the most appropriate next step in the management of this patient?

- a. Reexamine the patient in 1 month
- b. Corticosteroid cream to the affected area
- c. Administration of oral antibiotics
- d. Mammogram and biopsy of the affected area
- e. Modified radical mastectomy

**262.** A 50-year-old man presents with intractable peptic ulcer disease, severe esophagitis, and abdominal pain. Which of the following is most consistent with the diagnosis of Zollinger-Ellison



syndrome?

- a. Hypercalcemia
- b. Fasting gastrin level of 10 pg/mL
- c. Fasting gastrin level of 100 pg/mL
- d. Increase in gastrin level ( $> 200$  pg/mL) after administration of secretin
- e. Decrease in gastrin level ( $> 200$  pg/mL) after administration of secretin

**263.** A 29-year-old woman with a history of difficulty becoming pregnant presents to her primary care physician and is diagnosed with Grave disease on iodine uptake scan; her thyrotropin (TSH) level is markedly suppressed and her free thyroxine ( $T_4$ ) level is elevated. She desires to conceive as soon as possible and elects to undergo thyroidectomy. After she is rendered euthyroid with medications preoperatively, which of the following management strategies should also be employed to reduce the risk of developing thyroid storm in the operating room?

- a. Drops of Lugol iodine solution daily beginning 10 days preoperatively.
- b. Preoperative treatment with phenoxybenzamine for 3 weeks.
- c. Preoperative treatment with propranolol for 1 week.
- d. Twenty-four hours of corticosteroids preoperatively.
- e. No other preoperative medication is required.

**264.** A 30-year-old woman presents with hypertension, weakness, bone pain, and a serum calcium level of 15.2 mg/dL. Hand films below show osteitis fibrosa cystica. Which of the following is the most likely cause of these findings?

- a. Sarcoidosis
- b. Vitamin D intoxication
- c. Paget disease
- d. Metastatic carcinoma
- e. Primary hyperparathyroidism

**265.** A 35-year-old woman presents with a serum calcium level of 15.2 mg/dL and an elevated parathyroid hormone level. Following correction of the patient's hypercalcemia with hydration and furosemide, which of the following is the best therapeutic approach?

- a. Administration of steroids
- b. Radiation treatment to the neck
- c. Neck exploration and resection of all 4 parathyroid glands
- d. Neck exploration and resection of a parathyroid adenoma
- e. Avoidance of sunlight, vitamin D, and calcium-containing dairy products

**266.** A 58-year-old man presents with tachycardia, fever, confusion, and vomiting. Workup reveals markedly elevated (triiodothyronine)  $T_3$  and (thyroxine)  $T_4$  levels. He is diagnosed as having a thyroid storm. Which of the following is the most appropriate next step in the management of this patient?

- a. Emergent subtotal thyroidectomy
- b. Emergent total thyroidectomy
- c. Emergent hemodialysis

- d. Administration of fluid, antithyroid drugs,  $\beta$ -blockers, iodine solution, and steroids
- e. Emergent radiation therapy to the neck

**267.** A 34-year-old woman presents with hypertension, generalized weakness, and polyuria. Her electrolyte panel is significant for hypokalemia. Which of the following is the best initial test given her presentation and laboratory findings?

- a. Plasma renin activity and plasma aldosterone concentration
- b. Urine electrolytes
- c. Plasma cortisol level
- d. Overnight low-dose dexamethasone suppression test
- e. Twenty-four-hour urinary aldosterone level

**268.** Incisional biopsy of a breast mass in a 35-year-old woman demonstrates cystosarcoma phyllodes at the time of frozen section. Which of the following is the most appropriate management strategy for this lesion?

- a. Wide local excision with a rim of normal tissue
- b. Lumpectomy and axillary lymphadenectomy
- c. Modified radical mastectomy
- d. Excision and postoperative radiotherapy
- e. Excision, postoperative radiotherapy, and systemic chemotherapy

**269.** A 36-year-old woman, 20 weeks pregnant, presents with a 1.5-cm right thyroid mass. FNA is consistent with a papillary neoplasm. The mass is cold on scan and solid on ultrasound. Which of the following methods of treatment is contraindicated in this patient?

- a. Right thyroid lobectomy
- b. Subtotal thyroidectomy
- c. Total thyroidectomy
- d. Total thyroidectomy with lymph node dissection
- e.  $^{131}\text{I}$  radioactive ablation of the thyroid gland

**270.** A 63-year-old woman notices lumps on both sides of her neck. A fine-needle aspirate is nondiagnostic, and she undergoes total thyroidectomy. Final pathology reveals a 2-cm Hürthle cell carcinoma. Which of the following is the most appropriate postsurgical management of this patient?

- a. No further therapy is indicated.
- b. Chemotherapy.
- c. External beam radiotherapy.
- d. Radioiodine ablation.
- e. Chemotherapy, external beam radiotherapy, and radioiodine ablation.

**271.** A 51-year-old man presents with a 2-cm left thyroid nodule. Thyroid scan shows a cold lesion. FNA cytology demonstrates follicular cells. Which of the following is the most appropriate initial treatment of this patient?

- a. External beam radiation to the neck.



- b. Multidrug chemotherapy.
- c. TSH suppression by thyroid hormone.
- d. Prophylactic neck dissection is indicated along with a total thyroidectomy.
- e. Thyroid lobectomy.

**272.** A 41-year-old woman has noted bilateral thin serous discharge from her breasts. There seems to be no mass associated with it. Which of the following statements would be appropriate to tell the patient?

- a. Intermittent thin or milky discharge can be physiologic.
- b. Expressible nipple discharge is an indication for open biopsy.
- c. Absence of a mass on mammogram rules out malignancy.
- d. Galactorrhea is indicative of an underlying malignancy.
- e. Pathologic discharge is usually bilateral.

**273.** A 52-year-old woman presents with hypertension, obesity, and new skin striae. You are concerned about possible Cushing syndrome. Which of the following is the most common cause of Cushing syndrome?

- a. Adrenocortical hyperplasia
- b. Adrenocorticotrophic hormone (ACTH)–producing pituitary tumor
- c. Primary adrenal neoplasms
- d. Ectopic adrenocorticotrophic hormone (ACTH)–secreting carcinoid tumor
- e. Pharmacologic glucocorticoid use

**274.** A 34-year-old woman has recurrent fainting spells induced by fasting. She also reports palpitations, trembling, diaphoresis, and confusion prior to the syncopal episodes. She has relief of symptoms with the administration of glucose. Which of the following findings is most consistent with the diagnosis of an insulinoma?

- a. Serum glucose level > 50 mg/dL, elevated serum insulin levels, elevated C-peptide levels
- b. Serum glucose level > 50 mg/dL, elevated serum insulin levels, decreased C-peptide levels
- c. Serum glucose level < 50 mg/dL, elevated serum insulin levels, elevated C-peptide levels
- d. Serum glucose level < 50 mg/dL, elevated serum insulin levels, decreased C-peptide levels
- e. Serum glucose level < 50 mg/dL, decreased serum insulin levels, decreased C-peptide levels

**275.** A 36-year-old woman whose mother has just undergone treatment for breast cancer is asking about how this affects her and what can be done to lessen her chances of having the disease. Which of the following has the lowest risk factor for breast cancer?

- a. Dietary fat intake
- b. Paternal relative with breast cancer 1 (*BRCA1*) mutation
- c. Excessive estrogen exposure—early menarche, late menopause, nulliparity
- d. Previous biopsy with atypical hyperplasia
- e. Exposure to ionizing radiation

## Questions 276 to 280

For each clinical description, select the appropriate stage of breast cancer. Each lettered option may be used once, more than once, or not at all.

- a. Stage 0
- b. Stage I
- c. Stage II
- d. Stage III
- e. Stage IV

**276.** Tumor not palpable, clinically positive ipsilateral axillary lymph nodes fixed to one another, no evidence of metastases.

**277.** Tumor 4.0 cm; clinically positive, movable axillary ipsilateral lymph nodes; no evidence of metastases.

**278.** Tumor 2.1 cm, clinically negative lymph nodes, no evidence of metastases. Final pathology shows only ductal carcinoma in situ.

**279.** Tumor not palpable, but breast diffusely enlarged and erythematous, clinically positive supraclavicular nodes; no evidence of metastases.

**280.** Tumor 0.5 cm, clinically negative lymph nodes, pathological lumbar fracture.

**Questions 281 to 285**

A 43-year-old man presents with signs and symptoms of peritonitis in the right lower quadrant. The clinical impression and supportive data suggest acute appendicitis. At exploration, however, a tumor is found; frozen section suggests carcinoid features. For each tumor described, choose the most appropriate surgical procedure. Each lettered option may be used once, more than once, or not at all.

- a. Appendectomy
- b. Segmental ileal resection
- c. Cecectomy
- d. Right hemicolectomy
- e. Hepatic wedge resection and appropriate bowel resection

**281.** A 2.5-cm tumor at the base of the appendix.

**282.** A 1.0-cm tumor at the tip of the appendix.

**283.** A 0.5-cm tumor with serosal umbilication in the ileum.

**284.** A 1.0-cm tumor of the midappendix; a 1-cm firm, pale lesion at the periphery of the right lobe of the liver.

**285.** A 3.5-cm tumor encroaching onto the cecum and extensive liver metastases.

**Questions 286 to 290**

For each clinical problem outlined, select acceptable treatment options. Each lettered option may be used once, more than once, or not at all.

- a. No further surgical intervention
- b. Wide local excision
- c. Wide local excision with adjuvant radiation therapy
- d. Wide local excision with axillary lymph node dissection and radiation therapy
- e. Simple mastectomy (without axillary lymph node dissection)
- f. Modified radical mastectomy (simple mastectomy with in-contiguity axillary lymph node dissection)
- g. Radical mastectomy
- h. Bilateral prophylactic simple mastectomies

**286.** A 49-year-old woman undergoes biopsy of a 5.0-cm left breast mass; she has no palpable axillary lymph nodes. Biopsy of the mass shows cystosarcoma phyllodes.

**287.** A 42-year-old woman has a mammogram that demonstrates diffuse suspicious mammographic calcifications suggestive of multicentric disease. Biopsy of one of the lesions reveals ductal carcinoma in situ (DCIS).

**288.** A 51-year-old (premenopausal) woman undergoes needle localization biopsy for microcalcifications. Pathology reveals sclerosing adenosis.

**289.** A 49-year-old woman has a 6-cm palpable mass that is biopsy-proven ductal adenocarcinoma. She undergoes neoadjuvant chemotherapy which reduces the tumor to 3 cm in size. However, she has palpable axillary lymph nodes; FNA demonstrates adenocarcinoma. She desires breast conservation therapy if possible.

**290.** A neglected 82-year-old woman presents with a locally advanced breast cancer that is invading

the pectoralis major muscle over a broad base. She is otherwise in good health.

# Endocrine Problems and the Breast

## Answers

**242. The answer is a.** (*Brunicardi, pp 1353-1355.*) The thyroid scan shows a single focus of increased isotope uptake, often referred to as a hot nodule. Hyperfunctioning adenomas or hot nodules become independent of TSH control and secrete thyroid hormone autonomously, which results in clinical hyperthyroidism. The elevated thyroid hormone levels ultimately diminish TSH levels severely and thus depress function of the remaining normal thyroid gland. An isolated focus of increased uptake on a thyroid scan is virtually diagnostic of a hyperfunctioning adenoma. Graves disease demonstrates diffuse uptake of radioactive iodine by the thyroid gland. Carcinomas usually display diminished uptake and are called cold nodules. Multinodular goiter would display many nodules with varying activity.

**243. The answer is d.** (*Townsend, pp 1006-1007.*) This patient has adrenal insufficiency and needs treatment with corticosteroids. Chronic adrenal insufficiency (classic Addison disease) should be recognizable preoperatively by the constellation of skin pigmentation, weakness, weight loss, hypotension, nausea, vomiting, abdominal pain, hypoglycemia, hyponatremia, and hyperkalemia. Failure to recognize adrenal cortical insufficiency, particularly in the postoperative patient, may be a fatal error that is especially regrettable because therapy is effective and easy to administer. Adrenal insufficiency may occur in a host of settings including infections (eg, tuberculosis, [human immunodeficiency virus] HIV-associated infections), autoimmune states, adrenal hemorrhage (classically, during meningococcal septicemia), pituitary insufficiency, after burns, in the setting of coagulopathy, and after interruption of chronically administered exogenous steroids. Adrenal insufficiency may also develop insidiously in the postoperative period, progressing over a course of several days. This insidious course is seen when adrenal injury occurs in the perioperative period, as would be the case with adrenal damage from hemorrhage into the gland in a patient receiving postoperative anticoagulant therapy. The other answers all address individual components of the patient's condition but not the underlying disease.

**244. The answer is d.** (*Brunicardi, pp 1372-1374.*) The clinical presentation is consistent with a wound hematoma and necessitates exploration of the wound, drainage of the hematoma, and identification and control of any bleeding vessels. If airway control is unable to be obtained prior to the operating room, the wound should be opened at the bedside. Bilateral vocal cord dysfunction can be a cause of postoperative stridor and difficulty breathing, particularly after reoperative surgery; however, bilateral vocal cord dysfunction should manifest immediately after extubation. Hypocalcemia can occur in post-thyroidectomy due to ischemia or accidental removal of parathyroid tissue but is typically transient. Symptoms of hypocalcemia are usually neuromuscular and cardiac in nature.

**245. The answer is b.** (Townsend, p 877.) Multifocal disease refers to multiple tumors within 1 quadrant of the breast. If the lesions are small relative to the size of the breast, then the patient can still undergo breast conservation surgery with good results. Contraindications to breast conservation therapy include diffuse microcalcifications suspicious for malignancy, persistently positive margins in the face of multiple reexcisions, pregnancy (except in the third trimester with radiation therapy deferred until after delivery), multiple tumors in separate quadrants (multicentric disease), a previous history of therapeutic radiation to the breast, and expected poor cosmetic results (eg, large tumor, small breast).

**246. The answer is e.** (Townsend, p 885.) Currently, treatment of inflammatory breast cancer consists of multimodality therapy with neoadjuvant chemotherapy, surgery, and radiation, which results in a 50% 5-year survival rate. The clinical description of *peau d'orange* results from neoplastic invasion of dermal lymphatics with resultant edema of the breast; this clinical presentation and the skin biopsy findings are diagnostic for inflammatory breast cancer. Although the clinical picture may resemble that of a bacterial infection of the breast (mastitis), care must be taken to differentiate between the 2 pathologies.

**247. The answer is b.** (Townsend, pp 2109-2110.) Increased prolactin levels may be due to a variety of etiologies, including, but not limited to, medications, pregnancy, cirrhosis, or tumors. Prolactin-secreting tumors in the pituitary gland may cause bitemporal hemianopsia because of compression of the optic chiasm. They are typically associated with amenorrhea and galactorrhea in women. In both sexes, lack of libido and impotence or infertility may be noted. Sexual vigor is usually restored after removal of the adenomas. Observation alone is recommended for asymptomatic patients. Symptomatic relief can be afforded by dopaminergic agonists (eg, bromocriptine), which usually cause tumor shrinkage. Surgery is reserved for those individuals with persistent symptoms despite adequate therapy or who do not desire long-term medical therapy.

**248. The answer is c.** (Brunicardi, pp 1376-1381.) Elevated parathyroid hormone (PTH) levels in conjunction with elevated calcium levels are diagnostic for hyperparathyroidism. Primary hyperparathyroidism is a common disease, affecting 100,000 individuals each year in the United States. Essential to the diagnosis of hyperparathyroidism is the finding of hypercalcemia. Though there are many causes of hypercalcemia, hyperparathyroidism is by far the most prevalent. The majority of patients with primary hyperparathyroidism have a single parathyroid adenoma, which can be localized in 75% to 80% of patients with sestamibi scanning. Technetium 99m-labeled sestamibi is taken up by the parathyroid and thyroid glands. Hyperfunctioning parathyroid glands take up the sestamibi to a greater extent than normal glands, and therefore sestamibi scanning can be used to identify parathyroid adenomas. Patients with primary hyperparathyroidism have either normal or elevated urinary calcium. As the name suggests, patients with familial hypocalciuric hypercalcemia (FHH) have hypercalcemia. They also usually have elevated PTH, but urine calcium excretion is low (as opposed to normal to high as with a parathyroid adenoma). Surgery is not indicated in this relatively rare setting of hypercalcemia.



**249. The answer is b.** (Townsend, p 992.) A tumor in the tail of the pancreas with a rash called necrolytic migrating erythema is most consistent with a glucagonoma. Glucagonoma, a tumor of islet alpha cells, causes a syndrome of a characteristic rash, diabetes mellitus, anemia, weight loss, and elevated levels of circulating glucagon. Glucagonomas are usually present in the body or tail of the pancreas and easily identifiable on CT scanning of the abdomen. Treatment is surgical excision with a distal pancreatectomy. Metastases are common and should be resected whenever feasible. Medical management of symptoms involves administration of total parenteral nutrition containing amino acids and octreotide. The other islet cell tumors do not cause a characteristic rash.

**250. The answer is d.** (Townsend, pp 1011-1013.) Cushing disease is cortisol excess caused by an ACTH-hypersecreting pituitary adenoma. In these patients the ACTH level is normal or elevated and cortisol is suppressed with administration of high-dose dexamethasone. Cushing syndrome is an endocrine disorder caused by prolonged exposure of the body to elevated levels of cortisol, independent of the source. Clinical manifestations of glucocorticoid excess include hypertension, obesity, moon facies, buffalo hump, purple abdominal striae, and hirsutism. The most common cause of Cushing syndrome is pharmacologic glucocorticoid use for treatment of inflammatory disorders. Endogenous Cushing syndrome is rare, and the majority (75%) will have Cushing disease. The remainder will have primary adrenal Cushing syndrome or ectopic ACTH syndrome (most commonly arising from either neuroendocrine tumors or bronchogenic tumors).

**251. The answer is a.** (Brunicardi, pp 435-436.) Most clinicians would recommend reassurance and reexamination in this situation. Cysts are common lesions in the breasts of women in their thirties and forties and carry a very low risk for malignancy. A simple cyst is almost never associated with a malignancy. A complex cyst may be associated with an underlying malignancy and aspiration is usually recommended. If the cyst disappears with aspiration and the contents are not grossly bloody, the fluid does not need to be sent for cytologic analysis. If the lesion does not completely disappear or recurs multiple times after aspiration, then the fluid should be sent for cytology. Excision of a cyst is indicated if the cytologic findings are suspicious for malignancy. In young women, the breast parenchyma is dense, which limits the diagnostic value of mammography. A fluoroscopically guided needle localization biopsy is reserved for nonpalpable solid lesions of the breast.

**252. The answer is a.** (Brunicardi, pp 1361-1363.) Age is a very important prognostic indicator in papillary and follicular thyroid cancer. Age > 45 years is associated with a worse prognosis. Papillary carcinoma occurs more often in women, with a 2:1 female-to-male ratio. However, sex of the patient does not factor into the prognosis. Tumor grade is a measure of differentiation, the extent to which cancer cells are similar in appearance and function to healthy cells of the same tissue type. The degree of differentiation often relates to the clinical behavior of the particular tumor. Based on the microscopic appearance of cancer cells, pathologists commonly describe tumor grade by 4 degrees of severity: Grades 1, 2, 3, and 4. The cells of Grade 1 tumors are often well-differentiated or low-grade tumors, and are generally considered the least aggressive in behavior. Conversely, the cells of Grade 3 or Grade 4 tumors are usually poorly differentiated or undifferentiated high-grade tumors, and are generally the most aggressive in behavior. This patient's tumor is well-differentiated and is associated with a good prognosis. Larger tumors (> 4 cm) and metastasis to lymph nodes in the neck compartments are associated with a worse prognosis. The patient in this question has a small tumor and no evidence of LN involvement on ultrasound.

**253. The answer is b.** (*Brunicardi, pp 1361-1363.*) Treatment of high-risk papillary carcinomas consists of near-total (or total) thyroidectomy. If patients have lymph node metastases in the lateral neck, concomitant modified radical neck dissection should be performed with total thyroidectomy. Papillary carcinoma of the thyroid frequently metastasizes to cervical lymph nodes, but distant metastasis is uncommon. Overall, survival at 10 years is greater than 95%. Several scoring systems for determining prognosis have been developed; one of the more common systems takes into account age, grade, extrathyroidal invasion and metastases, and size (AGES). The surgical management of low-risk papillary thyroid cancers is controversial (lobectomy versus total thyroidectomy). Medullary, but not papillary, thyroid carcinoma is associated with multiple endocrine neoplasia syndrome.

**254. The answer is a.** (*Brunicardi, p 466.*) Lobular carcinoma in situ (LCIS) is considered to be a risk factor for invasive breast carcinoma, not an anatomic precursor. The risk for breast cancer is equivalent in both breasts, lasts indefinitely, and is not correlated to the amount of LCIS in the biopsy specimen. Patients are encouraged to perform monthly self-breast examinations and commit to yearly screening mammograms. Chemotherapy, radiation, and surgery are treatments reserved for DCIS and invasive carcinomas of the breast.

**255. The answer is d.** (*Brunicardi, p 436.*) Fibroadenomas occur infrequently before puberty but are the most common breast tumors between puberty and the early thirties. They usually are well-demarcated and firm. Although most fibroadenomas are no larger than 3 cm in diameter, giant or juvenile fibroadenomas are very large frequently. The bigger fibroadenomas (> 5 cm) occur predominantly in adolescent black girls. The average age at onset of juvenile mammary hypertrophy is 16 years. This disorder involves a diffuse change in the entire breast and does not usually manifest clinically as a discrete mass; it may be unilateral or bilateral and can cause an enormous and incapacitating increase in breast size. Regression may be spontaneous and sometimes coincides with puberty or pregnancy. Cystosarcoma phyllodes may also cause a large lesion. Together with intraductal carcinoma, it characteristically occurs in older women. Lymphomas are less firm than fibroadenomas and do not have a whorl-like pattern. They display a characteristic fish flesh texture.

**256. The answer is a.** (*Brunicardi, pp 1376-1380.*) The patient described is exhibiting classic signs and symptoms of hyperparathyroidism. In addition, if a history is obtainable, frequently the patient will relate a history of renal calculi and bone pain—the syndrome characterized as “groans, stones, and bones.” Acute management of the hypercalcemic state includes vigorous hydration to restore intravascular volume, which is invariably diminished. This will establish renal perfusion and thus promote urinary calcium excretion. Thiazide diuretics are contraindicated because they frequently cause patients to become hypercalcemic. Instead, diuresis should be promoted with the use of loop diuretics such as furosemide (Lasix). The use of intravenous phosphorus infusion is no longer recommended because precipitation in the lungs, heart, or kidney can lead to serious morbidity. Mithramycin is an antineoplastic agent that in low doses inhibits bone resorption and thus diminishes serum calcium levels; it is used only when other maneuvers fail to decrease the calcium level. Calcitonin is useful at times. Bisphosphonates are used for lowering calcium levels in resistant cases, such as those associated with humoral malignancy. Emergency neck exploration is seldom warranted. In unprepared patients, the morbidity is unacceptably high.

**257. The answer is c.** (*Brunicaudi, p 1380.*) Patients with symptomatic primary hyperparathyroidism as manifested by kidney stones, renal dysfunction, or osteoporosis should undergo parathyroidectomy. However, management of “asymptomatic” patients is controversial. Indications for surgical intervention for asymptomatic primary hyperparathyroidism include age less than 50 years, markedly elevated urine calcium excretion, kidney stones on radiography, decreased creatinine clearance, markedly elevated calcium or 1 episode of life-threatening hypercalcemia, and substantially decreased bone mass.

**258. The answer is c.** (*Brunicaudi, pp 1397-1398.*) The constellation of symptoms in this patient is typical of a functional adrenocortical tumor (androgens). Approximately 50% of adrenocortical tumors are functional and can secrete cortisol, androgens, estrogens, aldosterone, or multiple hormones. The single most important determinant of malignancy is the size of the tumor. Treatment consists of en bloc resection of the tumor and involved adjacent organs, such as the kidney or the tail of the pancreas. Symptoms related to hormone production can be minimized by complete resection despite the inability to cure advanced disease. Mitotane has been utilized as adjuvant therapy for unresectable or metastatic disease, but has not been proven to decrease mortality. Cushing disease refers to hypercortisolism due to a pituitary tumor and subsequent bilateral adrenal hyperplasia. Pheochromocytomas are characterized by hypertension and symptoms of excessive catecholamine production. Myelolipomas are benign adrenal lesions.

**259. The answer is c.** (*Brunicaudi, pp 1399-1400.*) Patients with pheochromocytomas should be treated preoperatively with  $\alpha$ -blockade using phenoxybenzamine 1 to 3 weeks before surgery.  $\beta$ -Blockade may be necessary in addition to  $\alpha$ -blockade for optimal blood pressure control, but should not be started in the absence of  $\alpha$ -blockade because of the risk of cardiovascular collapse. With  $\alpha$ -blockade, patients also require volume expansion.

**260. The answer is e.** (*Townsend, pp 2241-2243.*) The most appropriate treatment is immediate surgery. There is no evidence that general anesthesia and nonabdominal surgery increase premature labor and therefore surgery should not be delayed until after delivery of the baby. Sentinel lymph node biopsy is not routinely recommended during pregnancy because the radioactivity may harm the fetus. Radiation therapy is contraindicated in all trimesters of pregnancy. Patients in later stages of pregnancy, however, can start radiation therapy shortly after delivery, and some may be candidates for breast-conserving surgery and adjuvant radiotherapy. Administration of chemotherapy to a pregnant patient should be delayed until after the first trimester due to the increased risk of fetal abnormalities. Chemotherapy does not appear to increase the risk of congenital malformation when given in the second or third trimester of pregnancy. Elective termination of the pregnancy to receive appropriate therapy without the risk to the fetus is no longer routinely recommended because it has not been demonstrated to improve survival.

**261. The answer is d.** (*Townsend, p 885.*) This patient has Paget disease of the breast until proven otherwise with a thorough workup for breast cancer. She needs a mammogram and biopsy of the affected area. Paget disease of the breast represents a small percentage (1%) of all breast cancers and

is thought to originate in the retroareolar lactiferous ducts. It progresses toward the nipple-areola complex in most patients, where it causes the typical clinical finding of nipple eczema and erosion. Up to 50% of patients with Paget disease have an associated breast mass. Nipple-areolar disease alone usually represents in situ cancer; these patients have a 10-year survival rate of over 80%. In contrast, if Paget disease presents with a mass, the mass is likely to be an infiltrating ductal carcinoma. The generally recommended surgical procedure for Paget disease is currently a modified radical mastectomy. Watchful waiting, steroid creams, and antibiotics are not appropriate forms of management in a woman who presents with a rash involving the nipple.

**262. The answer is d.** (*Townsend, pp 986-987.*) Zollinger-Ellison syndrome (ZES) refers to hypergastrinemia resulting from an endocrine tumor. ZES must be excluded in all patients with intractable peptic ulcers. The diagnosis depends on elevated levels of gastrin along with increased secretion of gastric acid. Patients with Zollinger-Ellison tumors have very high basal levels of gastric acid ( $> 35$  mEq/h) and serum gastrin (usually  $> 1000$  pg/mL). In equivocal cases, when the gastrin level is not markedly elevated, a secretin stimulation test is usually obtained. In this test, a fasting gastrin level is obtained before and after the administration of secretin (at 2, 5, 10, and 20 minutes). A paradoxical rise in serum gastrin after intravenous secretin is diagnostic of Zollinger-Ellison syndrome. Hypercalcemia is not a finding associated with ZES. However, the presence of hypercalcemia in a patient with ZES should prompt a workup for MEN1 (multiple endocrine neoplasia type 1). In MEN1 patients, the organ most involved is the parathyroid. The next most common syndrome is ZES, followed by insulinoma.

**263. The answer is a.** (*Brunicaudi, p 1355.*) Drops of Lugol iodide solution daily beginning 10 days preoperatively should be prescribed to decrease the likelihood of postoperative thyroid storm, a manifestation of severe thyrotoxicosis. Propylthiouracil or methimazole can also be used preoperatively but are contraindicated in pregnant women. If thyroid storm occurs, treatment is  $\beta$ -blockade, for example, propranolol.

**264. The answer is e.** (*Brunicaudi, pp 1377-1378.*) Osteitis fibrosa cystica is a condition associated with hyperparathyroidism that is characterized by severe demineralization with subperiosteal bone resorption (most prominent in the middle phalanx of the second and third fingers), bone cysts, and tufting of the distal phalanges on hand films. These specific bone findings would not be present in sarcoidosis, Paget disease, or metastatic carcinoma. Vitamin D deficiency can lead to osteitis fibrosa cystica, but it would also be associated with hypocalcemia, not hypercalcemia.

**265. The answer is d.** (*Brunicaudi, pp 1381-1383.*) Treatment for primary hyperparathyroidism in this setting is resection of the diseased parathyroid glands after initial correction of the severe hypercalcemia. Parathyroidectomy without preoperative localization studies have a high success rate and low complication rate. Neck exploration will yield a single parathyroid adenoma in about 85% of cases. Two adenomas are found less often (approximately 5% of cases) and hyperplasia of all 4 glands occurs in about 10% to 15% of patients. If hyperplasia is found, treatment includes resection of  $3\frac{1}{2}$  glands. The remnant of the fourth gland can be identified with a metal clip in case reexploration becomes necessary. Alternatively, all 4 glands can be removed with autotransplantation of a small piece of parathyroid tissue into the forearm or sternocleidomastoid muscle. Subsequent hyperfunction,

should it develop, can then be treated by removal of this tissue. Patients often need calcium supplementation postoperatively. Vitamin D supplementation may also be necessary if hypocalcemia develops and persists despite treatment with oral calcium. Steroids and radiation therapy have no role in the treatment of primary hyperparathyroidism.

**266. The answer is d.** (*Brunicaudi, p 1355.*) Thyroid storm can be associated with high mortality rates if it is not appropriately managed in an intensive care unit setting. Treatment includes rapid fluid replacement, antithyroid medication such as propylthiouracil (PTU),  $\beta$ -blockers, iodine solutions, and steroids.  $\beta$ -Blockers are given to reduce peripheral conversion of  $T_4$  to  $T_3$  and decrease the hyperthyroid symptoms. Lugol iodine helps to decrease iodine uptake and thyroid hormone secretion. PTU therapy blocks formation of new thyroid hormone and reduces peripheral conversion of  $T_4$  to  $T_3$ . Corticosteroids block hepatic thyroid hormone conversion. The thyroid storm needs to be treated before undergoing any surgery. Radiation therapy and hemodialysis have no role in the treatment of thyroid storm.

**267. The answer is a.** (*Brunicaudi, p 1392.*) The biochemical diagnosis of hyperaldosteronism requires demonstration of elevated plasma aldosterone concentration (PAC) with suppressed plasma renin activity (PAR). A PAC: PAR ratio of 25 to 30:1 is strongly suggestive of the diagnosis. Hyperaldosteronism must be suspected in any hypertensive patient who presents with hypokalemia. Hypokalemia occurs spontaneously in up to 90% of patients with this disorder. Other individuals who should be evaluated for hyperaldosteronism include those with severe hypertension, hypertension refractory to medication, and young age at onset of hypertension. Plasma cortisol level and overnight low-dose dexamethasone suppression test are laboratory studies used in diagnosing Cushing syndrome. Neither urine electrolytes nor 24-hour urinary aldosterone level is beneficial in diagnosing hyperaldosteronism.

**268. The answer is a.** (*Brunicaudi, p 468.*) Excision with adequate margins of normal breast tissue is curative. Cystosarcoma phyllodes is a tumor most often seen in younger women. It can grow to enormous size and at times ulcerate through the skin. Still, it is a lesion with low propensity toward metastasis. Local recurrence is common, especially if the initial resection was inadequate. Very large lesions may necessitate simple mastectomy to achieve clear margins. Axillary lymphadenectomy, however, is seldom indicated without biopsy-positive demonstration of tumor in the nodes. The low incidence of metastatic disease suggests that adjunctive therapy is indicated only for known metastatic disease, even when the tumors are quite large and ulcerated.

**269. The answer is e.** (*Brunicaudi, pp 1361-1363.*) Radioactive  $^{131}\text{I}$  is contraindicated in pregnancy and should be used with caution in women of childbearing age. This patient has cytologic evidence of a papillary lesion, possibly papillary carcinoma. Papillary carcinoma is a relatively nonaggressive lesion with 10-year survival of 95%. The lesion is frequently multicentric, which argues for more complete resection. Metastases, when they occur, are usually responsive to surgical resection or radioablation therapy. Removal of the involved lobe, and possibly the entire thyroid gland, is appropriate. Central and lateral lymph node dissection is performed for clinically suspect lymph nodes. Papillary carcinoma is frequently multifocal. Bilateral disease mandates total thyroidectomy.



**270. The answer is d.** (*Brunicaudi, p 1367.*) The treatment of Hürthle cell carcinoma follows the same principles as follicular carcinoma. Primary treatment is surgical followed by radioiodine ablation. Hürthle cell cancer is a type of follicular cancer, but differs from follicular neoplasms in that it is more often multifocal and bilateral, and is more likely to spread to local nodes and distant sites. External beam radiotherapy is reserved for patients who need control of unresectable, locally invasive or recurrent disease. There is no role for routine chemotherapy in the treatment of Hürthle cell carcinoma. Chemotherapy has been used with little success in disseminated thyroid cancer.

**271. The answer is e.** (*Brunicaudi, pp 1364-1367.*) For lesions less than 4 cm in size, thyroid lobectomy is adequate because at least 80% of follicular lesions are adenomas. For confirmed carcinomas or lesions greater than 4 cm in size, total thyroidectomy should be performed. Follicular carcinomas cannot be diagnosed by FNA; capsular or vascular invasion on histology confirms a diagnosis of malignancy. There is no role for prophylactic neck dissection for follicular carcinomas. Suppression with thyroid hormone (Synthroid) in the setting of abnormal cytology is not recommended. There is no role for external beam radiotherapy or chemotherapy in this patient.

**272. The answer is a.** (*Brunicaudi, p 467.*) Nipple discharge from the breast may be classified as pathologic, physiologic, or galactorrhea. Galactorrhea may be caused by hormonal imbalance (hyperprolactinemia, hypothyroidism), drugs (oral contraceptives, phenothiazines, antihypertensives, tranquilizers), or trauma to the chest. Physiologic nipple discharge is intermittent, nonlactational (usually serous), and caused by stimulation of the nipple or to drugs (estrogens, tranquilizers). Both galactorrhea and physiologic discharge are frequently bilateral and arise from multiple ducts. Pathologic nipple discharge may be caused by benign lesions of the breast (duct ectasia, papilloma, fibrocystic disease) or by cancer. It may be bloody, serous, or gray-green. It is spontaneous and unilateral and can often be localized to a single nipple duct. When pathologic discharge is diagnosed, an effort should be made to identify the source. If an associated mass is present, it should be biopsied. If no mass is found, a terminal duct excision of the involved duct(s) should be performed.

**273. The answer is e.** (*Brunicaudi, pp 1394-1395.*) The most common cause of Cushing syndrome is iatrogenic, via administration of synthetic corticosteroids. Cushing syndrome refers to the clinical manifestations of glucocorticoid excess due to any cause (Cushing disease, administration of exogenous glucocorticoids, adrenocortical hyperplasia, adrenal adenoma, adrenal carcinoma, ectopic ACTH-secreting tumors) and includes truncal obesity, hypertension, hirsutism, moon facies, proximal muscle wasting, ecchymoses, skin striae, osteoporosis, diabetes mellitus, amenorrhea, growth retardation, and immunosuppression. Cushing disease is caused by hypersecretion of ACTH by the pituitary gland. This hypersecretion, in turn, is caused by either a pituitary adenoma (90% of cases) or diffuse pituitary corticotrope hyperplasia (10% of cases) because of hypersecretion of corticotropin-releasing hormone (CRH) by the hypothalamus.

**274. The answer is c.** (*Brunicaudi, pp 1217-1218.*) Laboratory studies in patients with insulinoma will uncover a low blood sugar (serum glucose < 50mg/dL), elevated serum insulin levels, and elevated levels of C-peptide. C-peptide levels are checked to rule out unauthorized administration of insulin



and will only be elevated in cases of excess endogenous insulin production.

**275. The answer is a.** (*Brunicardi, pp 436-440.*) Studies have failed to demonstrate a correlation between diet and breast cancer risk. Age is the most common risk factor. Another important risk factor is family history in a first-degree relative or presence of a genetic mutation such as *BRCA1* or 2, which can be inherited through either the maternal or the paternal side of the family. Other risk factors include excessive estrogen exposure, obesity, alcohol use, hormone replacement, ionizing radiation, and a history of a prior breast cancer or abnormal breast biopsy (LCIS or atypical hyperplasia).

**276 to 280. The answers are 276-d, 277-c, 278-a, 279-d, 280-e.** (*Brunicardi, pp 450-453.*) The TNM stage of breast cancer is assigned by measuring the greatest diameter of the tumor (T), assessing the axillary and clavicular lymph nodes for enlargement and fixation (N), and judging whether metastatic disease is present (M). T0 is indicated when there is no evidence of a primary tumor; Tis—carcinoma in situ; T1—tumors 2 cm or less; T2—tumors greater than 2 cm but not more than 5 cm; T3—tumors greater than 5 cm; and T4—tumors with extension into the chest wall or skin or inflammatory carcinomas. N0 is indicated when there is no evidence of regional lymph node metastasis; N1—positive, movable ipsilateral axillary nodes; N2—fixed ipsilateral axillary nodes or clinically apparent ipsilateral internal mammary nodes; N3—positive axillary nodes and ipsilateral internal mammary nodes or ipsilateral supra/infraclavicular nodes. Absence of evidence of metastatic disease is classified as M0 and distant metastatic disease as M1. The patient in question 277 has a T0N2M0 lesion. This is stage III (fixed or matted nodes are a poor prognostic sign). The patient in question 278 has a T2N1M0 lesion. This is stage II. The patient in question 279 has a TisN0M0 lesion. Carcinoma in situ lesions are by definition not invasive and therefore are classified as stage 0. The patient in question 280 has findings compatible with inflammatory breast cancer. A biopsy of the involved skin would confirm the diagnosis. Inflammatory breast cancer is a T4 lesion and would make this patient a stage III. The patient in question 281 has a T1N0M1 lesion. This is stage IV (stage IV is any T, any N, M1).

**281 to 285. The answers are 281-d, 282-a, 283-b, 284-e, 285-c.** (*Brunicardi, p 1088.*) Carcinoid tumors are most commonly found in the appendix and small bowel, where they may be multiple. They have a tendency to metastasize, which varies with the size of the tumor. Tumors less than 1 cm uncommonly metastasize and are adequately treated with an appendectomy. If the tumor is located at the base of the appendix, a right hemicolectomy is performed. Tumors greater than 2 cm are more often found to be metastatic. Metastasis to the liver and beyond may give rise to the carcinoid syndrome. The tumors cause an intense desmoplastic reaction. When metastatic lesions are found in the liver, they should be resected when technically feasible to limit the symptoms of the carcinoid syndrome. When extensive hepatic metastases are found, the disease is not curable. Resection of the appendix and cecum may be performed to prevent an early intestinal obstruction by locally encroaching tumor instead of a right hemicolectomy in patients with liver metastasis. Spread of the carcinoid tumor into the serosal lymphatics does not imply metastatic disease and local resection is potentially curative.

**286 to 290. The answers are 286-b, 287-e, 288-a, 289-d, 290-g.** (*Townsend, pp 871-896.*) Generally accepted treatment for stage I breast cancer in premenopausal women includes lumpectomy (wide

excision, partial mastectomy, quadrantectomy), combined with axillary lymph node dissection (or sentinel lymph node biopsy) and adjuvant radiation therapy, or modified radical mastectomy. Both approaches offer equivalent chances of cure; there is a higher incidence of local recurrence with lumpectomy, axillary dissection, and radiation, but this observation has not been found to affect the overall cure rate in comparison with mastectomy. Patients with familial breast cancer (multiple first-degree relatives and penetrance of breast cancer through several familial generations) have extremely high risks of developing breast cancer in the course of their lifetimes. A subset of patients with familial breast cancer has been identified by a specific gene mutation (*BRCA1*); however, the genetic basis of most cases of familial breast cancer has yet to be elucidated. A patient with a history of familial breast cancer and multiple biopsies showing atypia may reasonably request bilateral prophylactic simple mastectomies. Alternatively, she may continue with routine surveillance. Lobular carcinoma in situ is a histologic marker that identifies patients at increased risk for the development of breast cancer. It is not a precancerous lesion in itself, and there is no benefit to widely excising it because the risk of subsequent cancer is equal for both breasts. As the risk for the future development of breast cancer is now estimated to be approximately 1% per year, prophylactic mastectomy is no longer recommended. Proper management consists of close surveillance for cancer by twice-yearly examinations and yearly mammography. Sclerosing adenosis is a benign lesion. DCIS is the precursor of invasive ductal carcinoma. It is described in 4 histologic variants (papillary, cribriform, solid, and comedo), of which the comedo subtype shows the greatest tendency to recur after wide excision alone. DCIS is treated with wide excision alone (for small noncomedo lesions) or wide excision plus radiation therapy. For multicentric DCIS, simple mastectomy is recommended. Cystosarcoma phyllodes is treated with wide local excision with at least 1-cm margins; axillary lymphadenectomy is not routinely recommended in the absence of clinically suspicious nodes. There are few indications for radical mastectomy, as it is both more traumatic and more disfiguring than any other method of local control of breast cancer and offers no greater survival benefit. However, one indication for radical mastectomy is locally advanced breast cancer with wide invasion of the pectoralis major in a patient who is physiologically able to tolerate general anesthesia.