Malignant brain tumors

General ▪ Headache; mental activity changes ▪ Decreased motor strength and coordination ▪ Seizures; scanning speech ▪ Altered vital signs Localizing ▪ Third ventricle: changes in mental activity and level of consciousness, nausea, pupillary dilation and sluggish light reflex; later—paresis or ataxia ▪ Brain stem and pons: early—ipsilateral trigeminal, abducens, and facial nerve palsies; later—cerebellar ataxia, tremors, other cranial nerve deficits ▪ Third or fourth ventricle or aqueduct of Sylvius: secondary hydrocephalus ▪ Thalamus or hypothalamus: various endocrine, metabolic, autonomic, and behavioral changes ▪ Increased ICP, papilledema) ▪ Mental and behavioral changes ▪ Altered vital signs (increased systolic pressure; widened pulse pressure, respiratory changes) ▪ Speech and sensory disturbances ▪ In children, irritability, projectile vomiting : headache (bifrontal or bioccipital); worse in the morning; intensified by coughing, straining, or sudden head movements abnormal reflexes, motor responses : papilledema, nystagmus, hearing loss, flashing lights, dizziness, ataxia, paresthesia of face, cranial nerve palsies (V, VI, VII, IX, X, primarily sensory), hemiparesis, suboccipital tenderness; compression of supratentorial area produces other general and focal signs and symptoms Skull changes (bony bulge) over tumor ▪ Sphenoidal ridge, indenting optic nerve: unilateral visual changes and papilledema ▪ Prefrontal parasagittal: personality and behavioral changes ▪ Motor cortex: contralateral motor changes ▪ Anterior fossa compressing both optic nerves and frontal lobes: bilateral vision loss ▪ Pressure on cranial nerves causing varying symptom ▪ Decreased visual acuity and other vision disturbances Stiff neck and suboccipital discomfort

Pituitary tumors

As pituitary adenomas grow, they replace normal glandular tissue and enlarge the sella turcica, which houses the pituitary gland. The resulting pressure on adjacent intracranial structures produces these typical clinical manifestations: Neurologic: frontal headache visual symptoms, beginning with blurring and progressing to field cuts (hemianopsias) and then unilateral blindness P cranial nerve involvement (III, IV, VI) from lateral extension of the tumor, resulting in strabismus; double vision, with compensating head tilting and dizziness; conjugate deviation of gaze; nystagmus; lid ptosis; and limited eye movements increased intracranial pressure (ICP) (secondary hydrocephalus) personality changes or dementia, if the tumor breaks through to the frontal lobes seizures rhinorrhea, if the tumor erodes the base of the skull pituitary apoplexy secondary to hemorrhagic infarction of the adenoma. Such hemorrhage may lead to both cardiovascular and adrenocortical collapse. Endocrine: hypopituitarism, to some degree, in all patients with adenoma, becoming more obvious as the tumor replaces normal gland tissue (signs and symptoms include amenorrhea, decreased libido and impotence in men, skin changes [waxy appearance, decreased wrinkles, and pigmentation], loss of axillary and pubic hair, lethargy, weakness, increased fatigability, intolerance to cold, and constipation [because of decreased corticotropin and thyroid-stimulating hormone production]) addisonian crisis, precipitated by stress and resulting in nausea, vomiting, hypoglycemia, hypotension, and circulatory collapse diabetes insipidus, resulting from extension to the hypothalamus prolactin-

secreting adenomas (in 70% to 75%), with amenorrhea and galactorrhea GH-secreting adenomas, with acromegaly corticotropin-secreting adenomas, with Cushing's syndrome.

Laryngeal cancer

In intrinsic laryngeal cancer, the dominant and earliest symptom is hoarseness that persists longer than 3 weeks; in extrinsic cancer, it's a lump in the throat or pain or burning in the throat when drinking citrus juice or hot liquid. Later clinical effects of metastasis include dysphagia, dyspnea, cough, enlarged cervical lymph nodes, and pain radiating to the ear.

Thyroid cancer

The primary sign of thyroid cancer is a painless nodule, a hard nodule in an enlarged thyroid gland, or palpable lymph nodes with thyroid enlargement. Eventually, the pressure of such a nodule or enlargement causes hoarseness, dysphagia, dyspnea, and pain on palpation. If the tumor is large enough to destroy the gland, hypothyroidism follows, with its typical symptoms of low metabolism (mental apathy and sensitivity to cold). However, if the tumor stimulates excess thyroid hormone production, it induces symptoms of hyperthyroidism (sensitivity to heat, restlessness, and hyperactivity). Other clinical features include diarrhea, anorexia, irritability, vocal cord paralysis, and symptoms of distant metastasis.

Malignant spinal neoplasms

Extramedullary tumors produce symptoms by pressing on nerve roots, the spinal cord, and spinal vessels; intramedullary tumors, by destroying the parenchyma and compressing adjacent areas. Because intramedullary tumors may extend over several spinal cord segments, their symptoms are more variable than those of extramedullary tumors. The following clinical effects are likely with all malignant spinal cord neoplasms: Pain—Most severe directly over the tumor, radiates around the trunk or down the limb on the affected side and is unrelieved by bed rest. It may worsen when lying down or with straining, coughing, or sneezing. Pain can be diffuse, occurring over all extremities. Generally, it progressively worsens and isn't relieved by medication. Motor symptoms—Asymmetric spastic muscle weakness, decreased muscle tone, exaggerated reflexes, and a positive Babinski's sign. If the tumor is at the level of the cauda equina, muscle flaccidity, muscle wasting, weakness, and progressive diminution in tendon reflexes are characteristic. Sensory deficits—Contralateral loss of pain, temperature, and touch sensation (Brown-Séquard's syndrome). These losses are less obvious to the patient than functional motor changes. Caudal lesions invariably produce paresthesia in the nerve distribution pathway of the involved roots. Bowel and bladder symptoms—Urine retention is an inevitable late sign with cord compression. Early signs include incomplete emptying or difficulty with the urine stream, which is usually unnoticed or ignored. Cauda equina tumors cause bladder and bowel incontinence due to flaccid paralysis.

Lung cancer

Because early-stage lung cancer usually produces no symptoms, this disease is usually in an advanced state at diagnosis. These late-stage symptoms commonly lead to diagnosis: Epidermoid and small cell carcinomas —smoker's cough, hoarseness, wheezing, dyspnea,

hemoptysis, and chest pain Adenocarcinoma and large cell carcinoma —fever, weakness, weight loss, anorexia, and shoulder pain. In addition to their obvious interference with respiratory function, lung tumors may also alter the production of hormones that regulate body function or homeostasis. Clinical conditions that result from such changes are known as hormonal paraneoplastic syndromes: Gynecomastia may result from large cell carcinoma. Hypertrophic pulmonary osteoarthropathy (bone and joint pain from cartilage erosion due to abnormal production of growth hormone) may result from large cell carcinoma and adenocarcinoma. Cushing's and carcinoid syndromes may result from small cell carcinoma. Hypercalcemia may result from epidermoid tumors. Metastatic signs and symptoms vary greatly, depending on the effect of tumors on intrathoracic and distant structures: bronchial obstruction: hemoptysis, atelectasis, pneumonitis, dyspnea cervical thoracic sympathetic nerve involvement: miosis, ptosis, exophthalmos, reduced sweating chest wall invasion: piercing chest pain, increasing dyspnea, severe shoulder pain, radiating down arm esophageal compression: dysphagia local lymphatic spread: cough, hemoptysis, stridor, pleural effusion pericardial involvement: pericardial effusion, tamponade, arrhythmias P phrenic nerve involvement: dyspnea, shoulder pain, unilateral paralyzed diaphragm, with paradoxical motion recurrent nerve invasion: hoarseness, vocal cord paralysis vena caval obstruction: venous distention and edema of face, neck, chest, and back. Distant metastasis may involve any part of the body, most commonly the central nervous system, liver, and bone.

Breast cancer

Warning signals of possible breast cancer include: a lump or mass in the breast (a hard, nontender stony mass is usually malignant) change in symmetry or size of the breast change in skin, thickening, scaly skin around the nipple, dimpling, edema (peau d'orange), or ulceration change in skin temperature (a warm, hot, or pink area; suspect cancer in a nonlactating woman older than childbearing age until proven otherwise) unusual drainage or discharge (a spontaneous discharge of any kind in a nonbreast-feeding, nonlactating woman warrants thorough investigation; so does any discharge produced by breast manipulation (greenish black, white, creamy, serous, or bloody.) (If a breast-fed infant rejects one breast, this may suggest possible breast cancer.) change in the nipple, such as itching, burning, erosion, or retraction pain (not usually a symptom of breast cancer unless the tumor is advanced, but it should be investigated) bone metastasis, pathologic bone fractures, and hypercalcemia edema of the arm.

Gastric cancer

Early clues to gastric cancer are chronic dyspepsia and epigastric discomfort, followed in later stages by weight loss, anorexia, feeling of fullness after eating, anemia, and fatigue. If the cancer is in the cardia, the first sign or symptom may be dysphagia and, later, vomiting (commonly coffeeground vomitus). Affected patients may also have blood in their stools. The course of gastric cancer may be insidious or fulminating. Unfortunately, the patient typically treats himself with antacids or histamine blockers until the symptoms of advanced stages appear.

Esophageal cancer

Dysphagia and weight loss are the most common presenting symptoms. Dysphagia is mild and intermittent at first, but it soon becomes constant. Pain, hoarseness, coughing, and esophageal obstruction follow. Cachexia usually develops.

Pancreatic cancer

The most common features of pancreatic cancer are weight loss, abdominal or low back pain, jaundice, and diarrhea. Other generalized effects include fever, loss of appetite, nausea, vomiting, weakness, indigestion, clay-colored stools, paleness, depression, skin lesions (usually on the legs), and fatigue.

Colorectal cancer

Signs and symptoms of colorectal cancer result from local obstruction and, in later stages, from direct extension to adjacent organs (bladder, prostate, ureters, vagina, sacrum) and distant metastasis (usually liver). In the early stages, signs and symptoms are typically vague and depend on the anatomic location and function of the bowel segment containing the tumor. Later signs or symptoms usually include pallor, cachexia, ascites, hepatomegaly, or lymphangiectasis. ELDER TIP Older patients may ignore bowel symptoms, believing that they result from constipation, poor diet, or hemorrhoids. Evaluate your older patient's responses to your questions carefully. On the right side of the colon (which absorbs water and electrolytes), early tumor growth causes no signs of obstruction because the tumor tends to grow along the bowel rather than surround the lumen, and the fecal content in this area is normally liquid. It may, however, cause black, tarry stools; anemia; and abdominal aching, pressure, or dull cramps. As the disease progresses, the patient develops weakness, fatigue, exertional dyspnea, vertigo and, eventually, diarrhea, obstipation, anorexia, weight loss, vomiting, and other signs or symptoms of intestinal obstruction. In addition, a tumor on the right side may be palpable. On the left side, a tumor causes signs of an obstruction even in early stages because in this area stools are of a formed consistency. It commonly causes rectal bleeding (in many cases ascribed to hemorrhoids), intermittent abdominal fullness or cramping, and rectal pressure. As the disease progresses, the patient develops obstipation, P diarrhea, or “ribbon” or pencil-shaped stools. Typically, he notices that passage of stools or flatus relieves the pain. At this stage, bleeding from the colon becomes obvious, with dark or bright red blood in the feces and mucus in or on the stools. With a rectal tumor, the first symptom is a change in bowel habits, in many cases beginning with an urgent need to defecate on arising (morning diarrhea) or obstipation alternating with diarrhea. Other signs are blood or mucus in stools and a sense of incomplete evacuation. Late in the disease, pain begins as a feeling of rectal fullness that later becomes a dull, and sometimes constant, ache confined to the rectum or sacral region.

Kidney cancer

Kidney cancer produces a classic clinical triad (hematuria, pain, and a palpable mass), but any one may be the first sign of cancer. Microscopic or gross hematuria (which may be intermittent) suggests that the cancer has spread to the renal pelvis. Constant abdominal or

flank pain may be dull or, if the cancer causes bleeding or blood clots, acute and colicky. The mass is generally smooth, firm, and nontender. All three signs coexist in only about 10% of patients. Other signs include fever (perhaps from hemorrhage or necrosis), hypertension (from compression of the renal artery with renal parenchymal ischemia), rapidly progressing hypercalcemia (possibly from ectopic parathyroid hormone production by the tumor), and urine retention. Weight loss, edema in the legs, nausea, and vomiting signal advanced disease.

Liver cancer

Clinical effects of liver cancer include: a mass in the right upper quadrant tender, nodular liver on palpation severe pain in the epigastrium or the right upper quadrant bruit, hum, or rubbing sound if tumor involves a large part of the liver weight loss, weakness, anorexia, fever occasional jaundice or ascites occasional evidence of metastasis through venous system to lungs, from lymphatics to regional lymph nodes, or by direct invasion of portal veins dependent edema.

Bladder cancer

In early stages, about 25% of patients with bladder tumors have no symptoms. Commonly, the first sign is gross, painless, intermittent hematuria (in many cases with clots in the urine). Many patients with invasive lesions have suprapubic pain after voiding. Other signs and symptoms include bladder irritability, urinary frequency, nocturia, and dribbling.

Gallbladder and bile duct cancer

Clinically, gallbladder cancer is almost indistinguishable from cholecystitis—pain in the epigastrium or right upper quadrant, weight loss, anorexia, nausea, vomiting, and jaundice. However, chronic, progressively severe pain in an afebrile patient suggests malignancy. In patients with simple gallstones, pain is sporadic. Another telling clue to malignancy is palpable gallbladder (right upper quadrant), with obstructive jaundice. Some patients may also have hepatosplenomegaly. Progressive profound jaundice is commonly the first sign of obstruction due to extrahepatic bile duct cancer. The jaundice is usually accompanied by chronic pain in the epigastrium or the right upper quadrant, radiating to the back. Other common signs or symptoms, if associated with active cholecystitis, include pruritus, skin excoriations, anorexia, weight loss, chills, and fever.

Prostate cancer

Signs and symptoms of prostate cancer appear only in the advanced stages and include difficulty initiating a urine stream, dribbling, urine retention, unexplained cystitis and, rarely, hematuria. Pain may be present in the lower back, with urination, ejaculation, and bowel movement.

Testicular cancer

The first sign is usually a firm, painless, and smooth testicular mass, varying in size and sometimes producing a sense of testicular heaviness. When such a tumor causes chorionic gonadotropin or estrogen production, gynecomastia and nipple tenderness may result. In

advanced stages, signs and symptoms include ureteral obstruction, abdominal mass, cough, hemoptysis, shortness of breath, weight loss, fatigue, pallor, and lethargy.

Penile cancer

In a circumcised man, early signs of penile cancer include a small circumscribed lesion, a pimple, or a sore on the penis. In an uncircumcised man, however, such early symptoms may go unnoticed, so penile cancer first becomes apparent when it causes late-stage signs or symptoms, such as pain, hemorrhage, dysuria, purulent discharge, and obstruction of the urinary meatus. Rarely is metastasis the first sign of penile cancer.

Cervical cancer

Preinvasive cervical cancer produces no symptoms or other clinically apparent changes. Early invasive cervical cancer causes abnormal vaginal bleeding, persistent vaginal discharge, and postcoital pain and bleeding. In advanced stages, it causes pelvic pain, vaginal leakage of urine and feces from a fistula, anorexia, weight loss, and anemia.

Uterine cancer

Uterine enlargement, and persistent and unusual premenopausal bleeding, or any postmenopausal bleeding, are the most common indications of uterine cancer. The discharge may at first be watery and bloodstreaked, but it gradually becomes more bloody. Other signs or symptoms, such as pain and weight loss, don't appear until the cancer is well advanced.

Vaginal cancer

Commonly, the patient with vaginal cancer has experienced abnormal bleeding and discharge. Also, she may have a small or large, in many cases firm, ulcerated lesion in any part of the vagina. As the cancer progresses, it commonly spreads to the bladder (producing frequent voiding and bladder pain), the rectum (bleeding), vulva (lesion), pubic bone (pain), or other surrounding tissues.

Ovarian cancer

Typically, symptoms vary with the size of the tumor. An ovary may grow to considerable size before it produces overt symptoms. Occasionally, in the early stages, ovarian cancer causes vague abdominal discomfort, dyspepsia, and other mild GI disturbances. As it progresses, it causes urinary frequency, constipation, pelvic discomfort, distention, and weight loss. Tumor rupture, torsion, or infection may cause pain, which, in young patients, may mimic appendicitis. Granulosa cell tumors have feminizing effects (such as bleeding between periods in premenopausal women); conversely, arrhenoblastomas have virilizing effects. Advanced ovarian cancer causes ascites, rarely postmenopausal bleeding and pain, and symptoms relating to metastatic sites (most commonly pleural effusions).

Cancer of the vulva

In 50% of patients, cancer of the vulva begins with vulval pruritus, bleeding, or a small vulval mass (which may start as a small ulcer on the surface; eventually, it becomes infected and

painful), so such symptoms call for immediate diagnostic evaluation. Seventy percent of lesions develop on the labia, but tumors can be found on the clitoris, Bartholin's P glands, and perineum. Less common indications include a mass in the groin or abnormal urination or defecation.

Fallopian tube cancer

Generally, early stage fallopian tube cancer produces no symptoms. Late-stage disease is characterized by an enlarged abdomen with a palpable mass, amber-colored vaginal discharge, excessive bleeding during menstruation or, at other times, abdominal cramps, frequent urination, bladder pressure, persistent constipation, weight loss, and unilateral colicky pain produced by hydrops tubae profluens. (This last symptom occurs when the abdominal end of the fallopian tube closes, causing the tube to become greatly distended until its accumulated P secretions suddenly overflow into the uterus.) Metastasis develops by local extension or by lymphatic spread to the abdominal organs or to the pelvic, aortic, and inguinal lymph nodes. Extra-abdominal metastasis is rare.

Primary malignant bone tumors

Bone pain is the most common indication of primary malignant bone tumors. It's generally more intense at night; isn't usually associated with mobility. The pain is dull and usually localized, although it may be referred from the hip or spine and result in weakness or a limp. Another common sign is a mass or tumor. The tumor site may be tender and may swell; the tumor itself is often palpable. Pathologic fractures are common. In late stages, patient may be cachectic, with fever and impaired mobility.

Multiple myeloma

The earliest indication of multiple myeloma is severe, constant back and rib pain that increases with exercise and may be worse at night. Arthritic symptoms may also occur: achiness, joint swelling, and tenderness, possibly from vertebral compression. Other effects include fatigue, fever, malaise, slight evidence of peripheral neuropathy (such as peripheral paresthesia), and pathologic fractures. As multiple myeloma progresses, symptoms of vertebral compression may become acute, accompanied by anemia, weight loss, thoracic deformities (ballooning), and loss of body height (5” [12.7 cm] or more) due to vertebral collapse. Renal complications such as pyelonephritis (caused by tubular damage from large amounts of Bence Jones protein, hypercalcemia, and hyperuricemia) may occur. Severe, recurrent infection such as pneumonia may follow damage to nerves associated with respiratory function.

Basal cell epithelioma

Three types of basal cell epithelioma occur: Noduloulcerative lesions usually occur on the face, particularly the forehead, eyelid margins, and nasolabial folds. In early stages, these lesions are small, smooth, pinkish, and translucent papules. Telangiectatic vessels cross the surface, and the lesions are occasionally pigmented. As the lesions enlarge, their centers become depressed and their borders become firm and elevated. Ulceration P and local invasion eventually occur. These ulcerated tumors, known as rodent ulcers, rarely

metastasize; however, if untreated, they can spread to vital areas and become infected or cause massive hemorrhage if they invade large blood vessels. Superficial basal cell epitheliomas are multiple in many cases and commonly occur on the chest and back. They're oval or irregularly shaped, lightly pigmented plaques, with sharply defined, slightly elevated threadlike borders. Due to superficial erosion, these lesions appear scaly and have small, atrophic areas in the center that resemble psoriasis or eczema. They're usually chronic and don't tend to invade other areas. Superficial basal cell epitheliomas are related to ingestion of or exposure to arsenic-containing compounds. Sclerosing basal cell epitheliomas (morphea-like epitheliomas) are waxy, sclerotic, yellow to white plaques without distinct borders. Occurring on the head and neck, sclerosing basal cell epitheliomas commonly look like small patches of scleroderma.

Squamous cell carcinoma

Squamous cell carcinoma commonly develops on the skin of the face, the ears, the dorsa of the hands and forearms, and other sun-damaged areas. Lesions on sun-damaged skin tend to be less invasive and less likely to metastasize than lesions on unexposed skin. Notable exceptions to this tendency are squamous cell lesions on the lower lip and the ears. P These are almost invariably markedly invasive metastatic lesions with a generally poor prognosis. Transformation from a premalignant lesion to squamous cell carcinoma may begin with induration and inflammation of the preexisting lesion. When squamous cell carcinoma arises from normal skin, the nodule grows slowly on a firm, indurated base. If untreated, this nodule eventually ulcerates and invades underlying tissues. (See Staging squamous cell carcinoma, page 874.) Metastasis can occur to the regional lymph nodes, producing characteristic systemic symptoms of pain, malaise, fatigue, weakness, and anorexia.

Malignant melanoma

Common sites for melanoma are on the head and neck in men, on the legs in women, and on the backs of persons exposed to excessive sunlight. Up to 70% arise from a preexisting nevus. It rarely appears in the conjunctiva, choroid, pharynx, mouth, vagina, or anus. Suspect melanoma when any skin lesion or nevus enlarges, changes color, becomes inflamed or sore, itches, ulcerates, bleeds, undergoes textural changes, or shows signs of surrounding pigment regression (halo nevus or vitiligo). (See Recognizing potentially malignant nevi, page 876.) Each type of melanoma has special characteristics: Superficial spreading melanoma, the most common, usually develops between ages 40 and 50. Such a lesion arises on an area of chronic irritation. In women, it's most common between the knees and ankles; in Blacks and Asians, on the toe webs and soles (lightly pigmented areas subject to trauma). Characteristically, this melanoma has a red, white, and blue color over a brown or black background and an irregular, notched margin. Its surface is irregular, with small, elevated tumor nodules that may ulcerate and bleed. Horizontal growth may continue for many years; when vertical growth begins, prognosis worsens. Nodular melanoma usually develops between ages 40 and 50, grows vertically, invades the dermis, and metastasizes early. Such a lesion is usually a polypoidal nodule, with uniformly dark discoloration (it may be grayish), and looks like a blackberry. Occasionally, this melanoma is fleshcolored, with flecks of pigment around its base (possibly inflamed). Lentigo maligna

melanoma is relatively rare. It arises from a lentigo maligna on an exposed skin surface and usually occurs between ages 60 and 70. This lesion looks like a large (3- to 6-cm) flat freckle of tan, brown, black, whitish, or slate color and has irregularly scattered black nodules on the surface. It develops slowly, usually over P many years, and eventually may ulcerate. This melanoma commonly develops under the fingernails, on the face, and on the back of the hands.

Kaposi's sarcoma

The initial sign of Kaposi's sarcoma is one or more obvious lesions in various shapes, sizes, and colors (ranging from red-brown to dark purple) appearing most commonly on the skin, buccal mucosa, hard and soft palates, lips, gums, tongue, tonsils, conjunctiva, and sclera. In advanced disease, the lesions may join, becoming one large plaque. Untreated lesions may appear as large, ulcerative masses. Other signs and symptoms include: health history of AIDS pain (if the sarcoma advances beyond the early stages or if a lesion breaks down or impinges on nerves or organs) edema from lymphatic obstruction dyspnea (in cases of pulmonary involvement), wheezing, hypoventilation, and respiratory distress from bronchial blockage. The most common extracutaneous sites are the lungs and GI tract (esophagus, oropharynx, and epiglottis). Signs and symptoms of disease progression and metastasis include severe pulmonary involvement and GI involvement leading to digestive problems.

Hodgkin's lymphoma

The first sign of Hodgkin's lymphoma is usually a painless swelling of one of the cervical lymph nodes (but sometimes the axillary, mediastinal, or inguinal lymph nodes), occasionally in a patient who gives a history of recent upper respiratory infection. In older patients, the first signs and symptoms may be nonspecific—persistent fever, night sweats, fatigue, P weight loss, and malaise. Rarely, if the mediastinum is initially involved, Hodgkin's lymphoma may produce respiratory symptoms. Another early and characteristic indication of Hodgkin's lymphoma is pruritus, which, although mild at first, becomes acute as the disease progresses. Other symptoms depend on the degree and location of systemic involvement. Lymph nodes may enlarge rapidly, producing pain and obstruction, or enlarge slowly and painlessly for months or years. It isn't unusual to see the lymph nodes “wax and wane,” but they usually don't return to normal. Sooner or later, most patients develop systemic manifestations, including enlargement of retroperitoneal nodes and nodular infiltrations of the spleen, the liver, and bones. At this late stage other symptoms include edema of the face and neck, progressive anemia, possible jaundice, nerve pain, and increased susceptibility to infection.

Non-Hodgkin's lymphoma

Usually, the first indication of non-Hodgkin's lymphoma is swelling of the lymph glands, enlarged tonsils and adenoids, and painless, rubbery nodes in the cervical supraclavicular areas. In children, these nodes are usually in the cervical region, and the disease causes dyspnea and coughing. As the lymphoma progresses, the patient develops symptoms specific to the area involved and systemic complaints of fatigue, malaise, weight loss, fever, and night sweats.

Mycosis fungoides

The first sign of MF may be generalized erythroderma, possibly associated with itching. Eventually, MF evolves into varied combinations of infiltrated, thickened, or scaly patches, tumors, or ulcerations.

Acute leukemia

Signs of acute leukemia may be gradual or abrupt; they include high fever accompanied by thrombocytopenia and abnormal bleeding (such as nosebleeds), gingival bleeding, purpura, ecchymoses, petechiae, easy bruising after minor trauma, and prolonged menses. Nonspecific signs and symptoms, such as low-grade fever, weakness, and lassitude, may persist for days or months before visible symptoms appear. Other insidious signs and symptoms include pallor, chills, and recurrent infections. In addition, ALL, AML, and acute monoblastic leukemia may cause dyspnea, anemia, fatigue, malaise, tachycardia, palpitations, systolic ejection murmur, and abdominal or bone pain. Specific AML symptoms include local infections (laryngitis, pharyngitis, meningitis) or septicemia. Joint arthralgias and abdominal fullness (from enlarged spleen) may occur. Specific ALL symptoms include night sweats, shortness of breath, anorexia, weight loss, kepatosplenomegaly, and lymph adenopathy. When leukemic cells cross the blood-brain barrier and thereby escape the effects of systemic chemotherapy, the patient may develop meningeal leukemia (confusion, lethargy, headache).

Chronic myelogenous leukemia

Typically, during the chronic phase, CML induces the following clinical effects: anemia (fatigue, weakness, decreased exercise tolerance, pallor, dyspnea, tachycardia, and headache) thrombocytopenia, with resulting bleeding and clotting disorders (retinal hemorrhage, ecchymoses, hematuria, melena, bleeding gums, nosebleeds, and easy bruising) hepatosplenomegaly, with abdominal discomfort and pain in splenic infarction from leukemic cell infiltration. Other signs and symptoms include sternal and rib tenderness from leukemic infiltrations of the periosteum; low-grade fever; weight loss; anorexia; renal calculi or gouty arthritis from increased uric acid excretion; occasionally, prolonged infection and ankle edema; and, rarely, priapism and vascular insufficiency. Acceleration of the disease process results in fever, night sweats, splenomegaly, and bone pain.

Chronic lymphocytic leukemia

CLL is the most benign and the most slowly progressive form of leukemia. Clinical signs derive from the infiltration of leukemic cells in bone marrow, lymphoid tissue, and organ systems. In early stages, patients usually complain of fatigue, malaise, fever, and nodal enlargement. They're particularly susceptible to infection. In advanced stages, patients may experience severe fatigue and weight loss, with liver or spleen enlargement, bone tenderness, and edema from lymph node obstruction. Pulmonary infiltrates may appear when lung parenchyma is involved. Skin infiltrations, manifested by macular to nodular eruptions, occur in about one-half of the cases of CLL. As the disease progresses, bone marrow involvement may lead to anemia, pallor, weakness, dyspnea, tachycardia,

palpitations, bleeding, and infection. Opportunistic fungal, viral, and bacterial infections commonly occur in late stages