

TABLE 79-1 DISEASES ASSOCIATED WITH LYMPHADENOPATHY

1. Infectious diseases
 - a. Viral—*infectious mononucleosis syndromes (EBV, CMV), infectious hepatitis, herpes simplex, herpesvirus-6, varicella-zoster virus, rubella, measles, adenovirus, HIV, epidemic keratoconjunctivitis, vaccinia, herpesvirus-8*
 - b. Bacterial—*streptococci, staphylococci, cat-scratch disease, brucellosis, tularemia, plague, chancroid, melioidosis, glanders, tuberculosis, atypical mycobacterial infection, primary and secondary syphilis, diphtheria, leprosy, Bartonella*
 - c. Fungal—*histoplasmosis, coccidioidomycosis, paracoccidioidomycosis*
 - d. Chlamydial—*lymphogranuloma venereum, trachoma*
 - e. Parasitic—*toxoplasmosis, leishmaniasis, trypanosomiasis, filariasis*
 - f. Rickettsial—*scrub typhus, rickettsialpox, Q fever*
2. Immunologic diseases
 - a. Rheumatoid arthritis
 - b. Juvenile rheumatoid arthritis
 - c. Mixed connective tissue disease
 - d. Systemic lupus erythematosus
 - e. Dermatomyositis
 - f. Sjögren's syndrome
 - g. Serum sickness
 - h. Drug hypersensitivity—*diphenylhydantoin, hydralazine, allopurinol, primidone, gold, carbamazepine, etc.*
 - i. Angioimmunoblastic lymphadenopathy
 - j. Primary biliary cirrhosis
 - k. Graft-versus-host disease
 - l. Silicone-associated
 - m. Autoimmune lymphoproliferative syndrome
 - n. IgG4-related disease
 - o. Immune reconstitution inflammatory syndrome (IRIS)
3. Malignant diseases
 - a. Hematologic—*Hodgkin's disease, non-Hodgkin's lymphomas, acute or chronic lymphocytic leukemia, hairy cell leukemia, malignant histiocytosis, amyloidosis*
 - b. Metastatic—*from numerous primary sites*
4. Lipid storage diseases—*Gaucher's, Niemann-Pick, Fabry, Tangier*
5. Endocrine diseases—*hyperthyroidism*
6. Other disorders
 - a. Castleman's disease (*giant lymph node hyperplasia*)
 - b. Sarcoidosis
 - c. Dermatopathic lymphadenitis
 - d. Lymphomatoid granulomatosis
 - e. Histiocytic necrotizing lymphadenitis (*Kikuchi's disease*)
 - f. Sinus histiocytosis with massive lymphadenopathy (*Rosai-Dorfman disease*)
 - g. Mucocutaneous lymph node syndrome (*Kawasaki's disease*)
 - h. Histiocytosis X
 - i. Familial Mediterranean fever
 - g. Severe hypertriglyceridemia
 - k. Vascular transformation of sinuses
 - l. Inflammatory pseudotumor of lymph node
 - m. Congestive heart failure

Abbreviations: CMV, cytomegalovirus; EBV, Epstein-Barr virus.

with cervical adenopathy and a history of tobacco use. Localized or regional adenopathy implies involvement of a single anatomic area. Generalized adenopathy has been defined as involvement of three or more noncontiguous lymph node areas. Many of the causes of lymphadenopathy (Table 79-1) can produce localized or generalized adenopathy, so this distinction is of limited utility in the differential diagnosis. Nevertheless, generalized lymphadenopathy is frequently associated with nonmalignant disorders such as infectious

mononucleosis (Epstein-Barr virus [EBV] or cytomegalovirus [CMV]), toxoplasmosis, AIDS, other viral infections, systemic lupus erythematosus (SLE), and mixed connective tissue disease. Acute and chronic lymphocytic leukemias and malignant lymphomas also produce generalized adenopathy in adults.

The site of localized or regional adenopathy may provide a useful clue about the cause. Occipital adenopathy often reflects an infection of the scalp, and preauricular adenopathy accompanies conjunctival infections and cat-scratch disease. The most frequent site of regional adenopathy is the neck, and most of the causes are benign—upper respiratory infections, oral and dental lesions, infectious mononucleosis, or other viral illnesses. The chief malignant causes include metastatic cancer from head and neck, breast, lung, and thyroid primaries. Enlargement of supraclavicular and scalene nodes is always abnormal. Because these nodes drain regions of the lung and retroperitoneal space, they can reflect lymphomas, other cancers, or infectious processes arising in these areas. Virchow's node is an enlarged left supraclavicular node infiltrated with metastatic cancer from a gastrointestinal primary. Metastases to supraclavicular nodes also occur from lung, breast, testis, or ovarian cancers. Tuberculosis, sarcoidosis, and toxoplasmosis are nonneoplastic causes of supraclavicular adenopathy. Axillary adenopathy is usually due to injuries or localized infections of the ipsilateral upper extremity. Malignant causes include melanoma or lymphoma and, in women, breast cancer. Inguinal lymphadenopathy is usually secondary to infections or trauma of the lower extremities and may accompany sexually transmitted diseases such as lymphogranuloma venereum, primary syphilis, genital herpes, or chancroid. These nodes may also be involved by lymphomas and metastatic cancer from primary lesions of the rectum, genitalia, or lower extremities (melanoma).

The size and texture of the lymph node(s) and the presence of pain are useful parameters in evaluating a patient with lymphadenopathy. Nodes <1.0 cm² in area (1.0 cm \times 1.0 cm or less) are almost always secondary to benign, nonspecific reactive causes. In one retrospective analysis of younger patients (9–25 years) who had a lymph node biopsy, a maximum diameter of >2 cm served as one discriminant for predicting that the biopsy would reveal malignant or granulomatous disease. Another study showed that a lymph node size of 2.25 cm² (1.5 cm \times 1.5 cm) was the best size limit for distinguishing malignant or granulomatous lymphadenopathy from other causes of lymphadenopathy. Patients with node(s) ≤ 1.0 cm² should be observed after excluding infectious mononucleosis and/or toxoplasmosis unless there are symptoms and signs of an underlying systemic illness.

The texture of lymph nodes may be described as soft, firm, rubbery, hard, discrete, matted, tender, movable, or fixed. Tenderness is found when the capsule is stretched during rapid enlargement, usually secondary to an inflammatory process. Some malignant diseases such as acute leukemia may produce rapid enlargement and pain in the nodes. Nodes involved by lymphoma tend to be large, discrete, symmetric, rubbery, firm, mobile, and nontender. Nodes containing metastatic cancer are often hard, nontender, and nonmovable because of fixation to surrounding tissues. The coexistence of splenomegaly in the patient with lymphadenopathy implies a systemic illness such as infectious mononucleosis, lymphoma, acute or chronic leukemia, SLE, sarcoidosis, toxoplasmosis, cat-scratch disease, or other less common hematologic disorders. The patient's story should provide helpful clues about the underlying systemic illness.

Nonsuperficial presentations (thoracic or abdominal) of adenopathy are usually detected as the result of a symptom-directed diagnostic workup. Thoracic adenopathy may be detected by routine chest radiography or during the workup for superficial adenopathy. It may also be found because the patient complains of a cough or wheezing from airway compression; hoarseness from recurrent laryngeal nerve involvement; dysphagia from esophageal compression; or swelling of the neck, face, or arms secondary to compression of the superior vena cava or subclavian vein. The differential