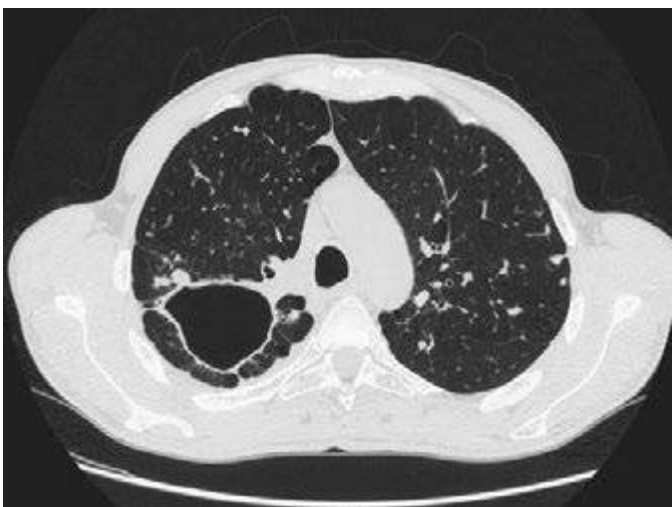




**FIGURE 202-6** Chest radiograph showing a right-upper-lobe infiltrate and a cavity with an air-fluid level in a patient with active tuberculosis. (Courtesy of Dr. Andrea Gori, Department of Infectious Diseases, S. Paolo University Hospital, Milan, Italy; with permission.)

and, in rare instances, adult respiratory distress syndrome. Physical findings are of limited use in pulmonary TB. Many patients have no abnormalities detectable by chest examination, whereas others have detectable rales in the involved areas during inspiration, especially after coughing. Occasionally, rhonchi due to partial bronchial obstruction and classic amphoric breath sounds in areas with large cavities may be heard. Systemic features include fever (often low-grade and intermittent) in up to 80% of cases and wasting. Absence of fever, however, does not exclude TB. In some cases, pallor and finger clubbing develop. The most common hematologic findings are mild anemia, leukocytosis, and thrombocytosis with a slightly elevated erythrocyte sedimentation rate and/or C-reactive protein level. None of these findings is consistent or sufficiently accurate for diagnostic purposes.



**FIGURE 202-7** CT scan showing a large cavity in the right lung of a patient with active tuberculosis. (Courtesy of Dr. Elisa Busi Rizzi, National Institute for Infectious Diseases, Spallanzani Hospital, Rome, Italy; with permission.)

#### EXTRAPULMONARY TB

In order of frequency, the extrapulmonary sites most commonly involved in TB are the lymph nodes, pleura, genitourinary tract, bones and joints, meninges, peritoneum, and pericardium. However, virtually all organ systems may be affected. As a result of hematogenous dissemination in HIV-infected individuals, extrapulmonary TB is seen more commonly today than in the past in settings of high HIV prevalence.

**Lymph Node TB (Tuberculous Lymphadenitis)** The most common presentation of extrapulmonary TB in both HIV-seronegative and HIV-infected patients (35% of cases worldwide and more than 40% of cases in the United States in recent series), lymph node disease is particularly frequent among HIV-infected patients and among children (Fig. 202-8). In the United States, besides children, women (particularly non-Caucasians) seem to be especially susceptible. Once caused mainly by *M. bovis*, tuberculous lymphadenitis today is due largely to *M. tuberculosis*. Lymph node TB presents as painless swelling of the lymph nodes, most commonly at posterior cervical and supraclavicular sites (a condition historically referred to as *scrofula*). Lymph nodes are usually discrete in early disease but develop into a matted nontender mass over time and may result in a fistulous tract draining caseous material. Associated pulmonary disease is present in fewer than 50% of cases, and systemic symptoms are uncommon except in HIV-infected patients. The diagnosis is established by fine-needle aspiration biopsy (with a yield of up to 80%) or surgical excision biopsy. Bacteriologic confirmation is achieved in the vast majority of cases, granulomatous lesions with or without visible AFBs are typically seen, and cultures are positive in 70–80% of cases. Among HIV-infected patients, granulomas are less well organized and are frequently absent entirely, but bacterial loads are heavier than in HIV-seronegative patients, with higher yields from microscopy and culture. Differential diagnosis includes a variety of infectious conditions, neoplastic diseases such as lymphomas or metastatic carcinomas, and rare disorders like Kikuchi's disease (necrotizing histiocytic lymphadenitis), Kimura's disease, and Castleman's disease.

**Pleural TB** Involvement of the pleura accounts for ~20% of extrapulmonary cases in the United States and elsewhere. Isolated pleural effusion usually reflects recent primary infection, and the collection of fluid in the pleural space represents a hypersensitivity response to mycobacterial antigens. Pleural disease may also result from contiguous parenchymal spread, as in many cases of pleurisy accompanying



**FIGURE 202-8** Tuberculous lymphadenitis affecting the cervical lymph nodes in a 2-year-old child from Malawi. (Courtesy of Prof. S. Graham, Centre for International Child Health, University of Melbourne, Australia; with permission.)