



## CHAPTER I

### BACKGROUND and RATIONALE

In spite of epidemiologic studies and identification of risk factors for the disease, tuberculosis continues to be a world health problem. There are approximately ten million new cases and three million deaths from tuberculosis every year.<sup>(1)</sup> Despite initiatives to combat and control the disease, there are an estimated one billion infected persons worldwide. Hence, it remains to be a problem despite measures towards eradication in developed countries. While North America is on its way to elimination of tuberculosis and other developed and developing nations show a decline in mortality rate due to the disease, the Philippines deviated from the pattern. From 1960 to 1989, the tuberculosis (TB) mortality is reduced only by 1.5% annually. In the unvaccinated Filipino population, tuberculosis infection is evident in 54% using an 8 mm. or more criterion for tuberculin test positivity.<sup>(2)</sup>

Pulmonary tuberculosis is a disease transmissible from person to person by airborne route brought about by bacilli, most commonly *Mycobacterium tuberculosis*. Considered important factors in the transmission of tubercle bacilli are presence of acid fast bacilli on sputum examination, frequency and duration of cough, ventilation and length of exposure to contaminated air. It is perceived that

the most effective measure in preventing transmission is prompt administration of a multiple anti-tuberculosis drug regimen with which the patient is compliant with.

### **Pathogenesis**

Tubercle bacillus is disseminated through three ways namely : bronchogenic, hematogenous and lymphatic. Bronchogenic dissemination occurs when exudate from a cavity or area of caseation drains into a bronchus and is aspirated into previously uninfected area on either the same or opposite side. Hematogenous spread leads to miliary tuberculosis and to extrapulmonary lesions throughout the body. It maybe an acute or a chronic type of dissemination. Lymphatic spread is responsible for involvement of hilar and mediastinal nodes, common in primary infection and often seen in children.<sup>(3,4)</sup>

The reaction to tubercle bacilli depends on the presence or absence of immunity to tuberculo-protein. In persons who do not have tissue immunity or hypersensitivity, primary infection develops. In individuals with immunity due to previous infection or BCG vaccination, reinfection disease may occur.<sup>(4)</sup>

### **Primary Tuberculosis**

Primary tuberculosis is also known as first-infection tuberculosis. It occurs in a patient who has not

been previously infected when live tubercle bacilli produce a local inflammatory process in the lung.<sup>(3,4)</sup> There are few clinical symptoms thus, the disease is often overlooked. Variations in the findings are noticeable. In some patients, parenchymal infiltrate becomes invisible on chest x-ray while a considerable hilar node enlargement is observed. In others, the reverse maybe true.<sup>(3)</sup> Occasionally, the first manifestations are pleural effusion and pleural disease. Pleural effusion is more common in adults than in children.<sup>(4)</sup> Many patients who develop primary TB have an uncomplicated course.

#### **Postprimary Tuberculosis (Reinfection, Reactivation)**

Postprimary or reinfection tuberculosis occurs when tubercle bacilli produce pulmonary inflammatory disease in an individual who has been previously sensitized to tuberculin. This condition tends to be progressive, responsible for symptomatic pulmonary illness unless therapy is administered. There is a tendency for the secondary or reinfection form of TB to localize in the apices and upper lobes. Lymph node involvement is not as common as in primary TB.<sup>(5)</sup>

#### **Natural History**

Primary tuberculous infection is usually asymptomatic. It may occur as a non-specific pneumonitis in the lower or midlung areas. Hilar lymph node enlargement is usual and may produce bronchial obstruction in some patients.

The onset of pulmonary TB is usually insidious and the illness may not be noted by the patient for sometime. It is a chronic wasting disease and constitutional manifestations are more prominent than respiratory symptoms. Weight loss, low-grade fever and night sweats are common. Chronic cough is the principal respiratory complaint. Hemoptysis is also frequent, usually limited to blood-streaked sputum.

In the Philippines, a sociological study showed that 28% of persons 20 years or older experienced symptoms suggestive of TB: cough, fever, chest and/or back pain and hemoptysis.<sup>(2)</sup> The National Tuberculosis Program established criteria of symptoms suggestive of PTB which when present in an individual makes him eligible for sputum examination. These symptoms include: cough for 2 weeks or more with or without sputum; chest pain for one month or more; hemoptysis or recurrent blood streaking at anytime; fever for one month or more and progressive weight loss.<sup>(2)</sup>