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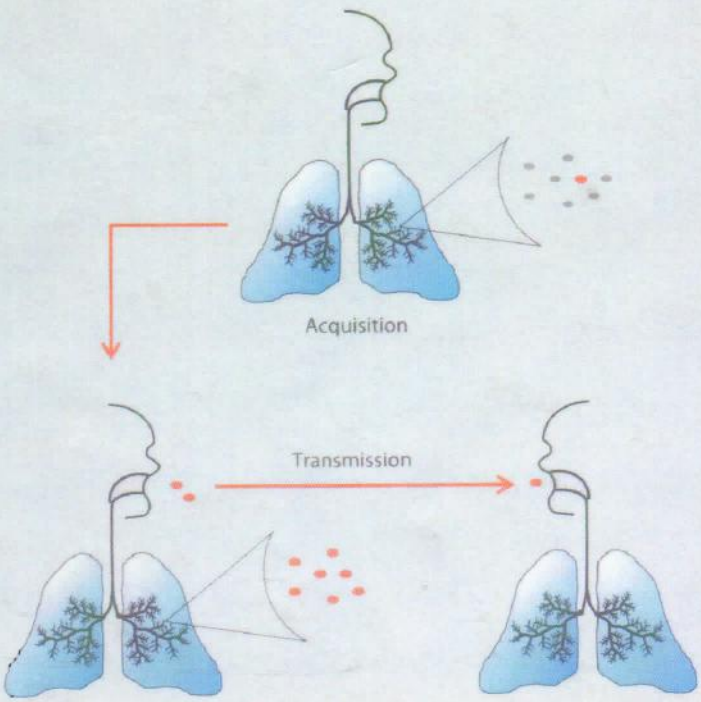
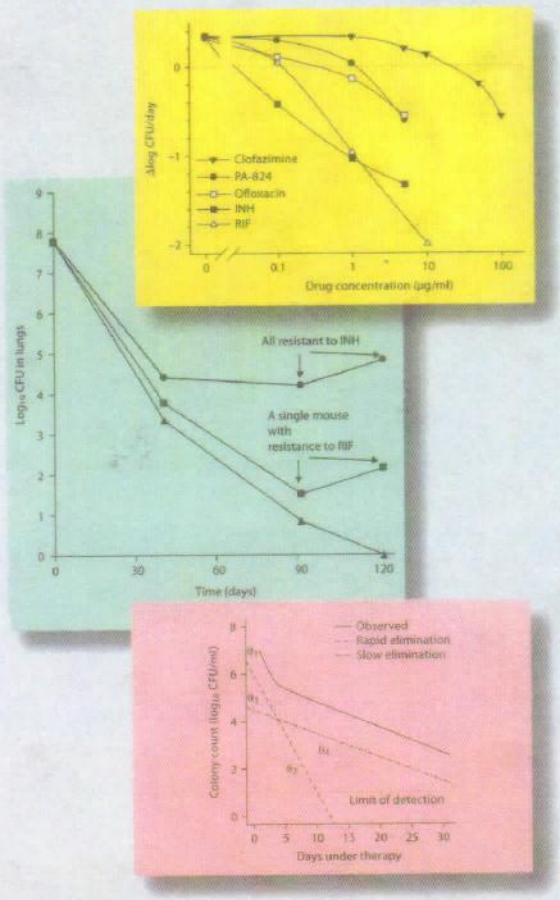
Antituberculosis Chemotherapy

Editors
Peter R. Donald
Paul D. van Helden





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Contents

Chapter 20

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Diabetes Mellitus and Tuberculosis Treatment

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Abstract

Diabetes mellitus (DM) not only increases the risk of active tuberculosis (TB) 3- to 5-fold, it also puts patients at an increased risk for poor treatment outcomes. The global epidemic of DM thus has serious implications for control and treatment of TB. DM in TB patients often goes unnoticed, but as many as 10–30% of TB patients may have concurrent DM. With regard to treatment, rifampicin hampers glycaemic control by increasing the metabolism of most oral antidiabetic drugs, while DM has been associated with failure of TB treatment. Some data suggest that plasma rifampicin concentrations are lower in patients with DM. Although sometimes advocated, TB prophylaxis has not been implemented widely among patients with DM. Prospective studies are needed to improve prevention, early detection and treatment of concomitant DM and TB, especially in developing countries.

In the era before insulin therapy, patients with type 1 diabetes in the western world appeared doomed to die of pulmonary tuberculosis (TB) if they survived diabetic coma [1]. With the introduction of insulin in 1922, this picture changed, although the risk of developing TB remained high, especially in lean diabetic patients [2]. The risk correlated with duration of diabetes and with the extent of hyperglycaemia [2]. Once diagnosed, TB often ran a rapid, progressive course in diabetes patients. Among 2,010 patients treated between 1930 and 1953, 1,061 (53%) died, the majority within 1 year [3]. Following the introduction of the first antituberculous drugs, streptomycin (1945), para-aminosalicylic acid (1949) and isoniazid (INH; 1952), the prognosis of diabetic patients with TB improved dramatically. Although mortality was not as high as before, according to most studies, diabetes still enhanced the severity of TB, with more pulmonary cavities and a higher bacterial load [3].

In the second half of the 20th century, the association between TB and diabetes mellitus (DM) was neglected. In recent years, with the current global growth of DM, the link between the 2 diseases is being rediscovered. The epidemic growth of DM occurs especially in developing countries, where TB is highly endemic. As a result, DM and TB will increasingly present together, and this calls for renewed interest in this topic. In this chapter we will focus on combined TB and DM, and on TB prophylaxis for DM patients.

Diabetes Mellitus and Tuberculosis – Epidemiology

Both type 1 and type 2 DM are associated with an increased risk of TB; among TB patients type 2 DM is often undiagnosed. Given its worldwide prevalence, DM contributes significantly to the TB problem, especially in areas with a low HIV prevalence. Because DM is emerging rapidly, especially in TB-endemic countries, the effect of DM on the global TB epidemic will increase in the near future.

Globally, an estimated 285 million people live with DM, a number expected to grow to at least 438 million by the year 2030 when more than 80% of adult cases will live in low- or middle-income countries [4]. At present, 12–16 million people live with TB disease, and 1.2–1.4 million people die from TB every year [5]. With regard to DM, Asia is considered as the epicentre of the current diabetes pandemic; India, China, Indonesia and Pakistan (the 4 most populous