

Tuberculosis

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Tuberculosis (TB) is a common infectious disease caused by *Mycobacterium tuberculosis* (*M. tuberculosis*)¹.

Features

The classic symptoms are a chronic cough (for 3 weeks or more) with blood-tinged sputum, fever, night sweats, and weight loss. Infection of other organs causes a wide range of symptoms. Diagnosis rely on chest X-rays, a tuberculin skin test, blood tests, as well as microscopic examination, biochemical tests (including ADA) and microbiological culture of bodily fluids such as sputum, pleural fluid, CSF, etc and also histopathological examination of some specimens like lymph nodes².

Conventional methods of culture and sensitivity are time consuming. Search for rapid diagnostic method is ongoing. Recent developments of polymerase chain reaction (PCR) technique, Bactec 460 test and detection of specific *M. tuberculosis* antibodies (IgM, IgG and IgA classes) are promising^{3,4}.

Incidence of tuberculosis (per 100,000 people) in Bangladesh

TB is a major public health problem in Bangladesh. Over 300,000 people develop the disease every year of whom 70,000 die. The incidence of tuberculosis (per 100,000 people) in Bangladesh was last reported at 225.00 in 2010, according to a World Bank report released in 2011. The incidence of tuberculosis (per 100,000 people) in Bangladesh was 225.00 in 2009, according to a World Bank report published in 2010. The incidence of tuberculosis (per 100,000 people) in Bangladesh was reported at 225.00 in 2008, according to the World Bank. Incidence of tuberculosis is the estimated number of new pulmonary, smear positive, and extra-pulmonary tuberculosis cases⁵.

In 1993 World Health Organization (WHO) declared TB as a global emergency and recommended a standard strategy for control of the disease that is known as the Directly Observed Treatment Short Course (DOTS) Strategy. Bangladesh adopted this strategy in 1993 and had expanded at all upazillas in collaboration with the partner NGOs by June 1998. At present the NTP of Bangladesh, together with its partners, is expanding the DOTS strategy in order to achieve the target of at least 70% case detection and 85% cure rates under Health, Nutrition and Population Sector Programme (HNPSP). The overall goals of TB control are to reduce morbidity and mortality and thus decrease transmission of infection and to prevent development of drug resistance⁶.

Epidemiology

One third of the world's population is thought to have been infected with *M. tuberculosis*, and new infections occur at a rate of about one per second. In 2007 there were an estimated 13.7 million chronic active cases, and in 2010 there were 8.8 million new cases, and 1.5 million deaths, mostly in developing countries. The absolute number of TB cases has been decreasing since 2006 and new cases since 2002. In addition, more people in the developing world contract TB because their immune systems are more likely to be compromised due to higher rates of HIV/AIDS. The distribution of TB is not uniform across the globe; about 80% of the population in many Asian and African countries test positive in tuberculin tests, while only 5-10% of the U.S. population test positive⁷⁻⁹.

Pathogenesis

It is spread through the air when people who have an active TB infection cough, sneeze, or otherwise transmit their saliva through the air. TB usually attacks the lungs (pulmonary TB-80%

cases), but can also affect other parts of the body (extrapulmonary TB) such as gastrointestinal tract, lymph nodes, genitourinary tract, bone and joint areas, meninges, etc, where they are spread via the blood stream, lymphatics or through direct extension to other organs. Most infections (90%) in humans result in an asymptomatic, latent infection, and about one in ten latent infections eventually progress to active disease, which if left untreated, kills more than 50% of those infected⁶.

Treatment

Treatment of TB should be started as soon as possible after a confirmed diagnosis has been made. The offensive treatment not only cures the patient but also prevent the transmission of this disease. The effective chemotherapy for TB consists of two phases. The initial intensive phase of drugs [rifampicin, isoniazid (INH), pyrazinamide, ethambutol] administered for 2 months in new cases and 3 months in retreatment cases. The aim is to rapidly reduce and eliminate the multiplying bacilli without allowing the development of acquired resistance to the prescribed drugs. This is the vital stage of treatment. The continuous phase is essential to eliminate the remaining bacilli population (Rifampicin+ INH) and lasts for 4 months. Treatment and cure of infectious cases of TB will interrupt transmission of TB infection in the community. The pivotal part of the treatment mainly depends on the compliance of the patient and effective regimen and accurate dose of the drug according to the weight of the patient and must be continued for at least 6 months⁶.

Multidrug-resistant tuberculosis (MDR-TB) is the biggest threat to serious TB control efforts. MDR-TB is dangerous because it harbors TB bacilli resistant to standard first line drugs such as isoniazid and rifampicin, the two most powerful anti-TB drugs. MDR-TB is often the result of inconsistent or incomplete treatment, when patients fail to take their medicines regularly, usually because they begin to feel better and wrongly assume they are completely cured. Sometimes patients develop MDR-TB because they follow wrong treatment regimens prescribed by doctors and health workers. In this situation, 2nd line anti-TB drugs are required which are

costlier, have more side effects, duration of treatment is at least 18-24 months and offers only 40-50% cure rates. Moreover the MDR TB patients will transmit the MDR-TB organisms in the community which is an alarming situation for the relatives, neighbours and the community^{6,10,11}.

Recent Trends

An extensively drug resistant TB (XDR-TB), especially in patients with TB and HIV/AIDS, is seriously posing a threat to TB control. WHO is pushing global policy to fast forward coordinated public health interventions in order to reduce the fatalities resulting from this dangerous combination of TB and HIV/AIDS. According to a recent WHO report 910,000 lives have been saved over the last six years by stepping up collaboration between TB and HIV/AIDS services. Results of the world's most advanced TB vaccine trial that would be out in early 2013 could perhaps point to a more effective vaccine against TB thereby reducing the burden of infection and fatalities very soon¹².

World TB Day 2012 slogan

Every year on the 24th March, people all over the world observe the World TB Day commemorating the discovery of M. tuberculosis, which is responsible for TB. On this day in 1882 Dr. Robert Koch discovered the bacteria that causes TB. The discovery led to the subsequent diagnosis and cure of the infectious disease that was then killing an estimated one out of every seven people at very young ages in the Europe and Americas. One hundred years later in 1982, WHO and International Union against Tuberculosis and Lung Disease (IUATLD) jointly decided to observe the World TB Day to remember the discovery and to raise awareness among people and at all levels of health workers about TB. We observed World TB day just a few days back on 24 March 2012. This year's campaign slogan was Stop TB in my lifetime¹².

World TB Day is an occasion to raise public awareness on a contagious disease that is treatable and preventable and yet has spread to epidemic proportions and continues to kill millions of people each year, especially in the developing

world. The theme of World TB Day 2012 "Stopping TB in my lifetime" lends immediacy to the mission to halt TB and underlined the fact that everyone can make it his or her responsibility to eliminate the deadly disease from the face of the earth in the foreseeable future. The day offered an opportunity to focus on TB-related problems and solutions and to support worldwide efforts to control TB¹².

People, young and old, living in different countries can have the following hopes to put an end to TB in their lifetimes:

- o No more deaths from TB
- o Faster treatment
- o Quick, low cost, low tech test for TB
- o An effective TB vaccine
- o A TB free world

Seminars, symposiums, quiz programmes, poster presentations and TB vaccination camps for children were some of the events lined up in urban and rural areas in an attempt to increase awareness and check the spread of TB.

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