Commentary

Tuberculosis – An Under-appreciated Disease†

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Tuberculosis Worldwide

Tuberculosis (TB, as usually abbreviated) is a major cause of morbidity and mortality in many countries, and a significant public health problem worldwide. The World Health Organization (WHO) estimates that there are about 8.8 million new cases of TB and 1.6 million deaths from TB every year.[1]

Non-compliance with anti-TB drug treatment, or inappropriate treatment, or both, has led to one of the greatest challenge facing TB control programmes worldwide, i.e. drug-resistant tuberculosis. Drug-resistant TB is much more difficult and costly to treat than fully drug-susceptible TB. An estimated 490,000 cases of multi-drug resistant TB (MDR-TB), causing about 110,000 deaths, occur each year among both new and previously treated cases. These cases are resistant to rifampicin and isoniazid, the 2 most effective first-line anti-TB drugs.

The 2008 WHO Report on Anti-TB Drug Resistance stated that the world was experiencing the highest ever recorded rates of MDR-TB, with an average proportion among all TB cases of 5.3%. There were 14 geographic areas showing MDR-TB rates greater than 6% among new TB cases. These areas were mainly in countries of the former Soviet Union and in China. The highest rate of MDR-TB was reported in Baku City, the capital of Azerbaijan, where nearly a quarter of new TB cases were reported to be MDR-TB.[2]

The same 2008 WHO Report also indicated that cases of extensively drug-resistant TB (XDR-TB) have been reported in 45 countries, and emphasised that this phenomenon threatens to derail 10 years of progress in TB control. XDR-TB is TB that is resistant not just to rifampicin and isoniazid, but also to a fluoroquinolone and to 1 of 3 injectable second-line anti-TB drugs (kanamycin, amikacin or capreomycin).

XDR-TB is thus very difficult to treat, and the success rate of treatment is only 30% at best, in contrast to 50% to 70% for MDR-TB and over 95% success for pan-sensitive tuberculosis.

Another major challenge has been the impact of the pandemic of human immunodeficiency virus (HIV). HIV infection makes it more likely both for tuberculosis to occur, and for latent infection to progress to active disease. There is also an association between HIV and MDR-TB.[2] The incidence and mortality of TB are therefore higher in countries with a high prevalence of HIV, e.g. sub-Saharan Africa.

TB in Singapore

The incidence of tuberculosis in Singapore is the lowest in Southeast Asia. However, the incidence rate, at just below 40 cases per 100,000 resident population, is several times higher than that in the United States, Western Europe, and Australia. Moreover, the TB incidence in Singapore rose in 2008, after a decade of continuous decline. Many Singaporeans, including healthcare workers are surprised when they are told that more than a thousand new cases of TB are reported among Singapore citizens and permanent residents each year.

The new cases actually numbered more than 1400 in each of the past 2 years. A common perception is that TB belongs in the less developed countries in Asia and Africa, or to Singapore in times past. It is difficult to appreciate that TB continues to be common in Singapore today.

As a result, when confronted by TB, there is often a range of less-than-appropriate responses. For example, persons whose illness starts with a chronic cough may not be diagnosed with TB until much later. When finally diagnosed, the right drug combination may not be prescribed, the patient's progress is not monitored closely enough, or the patient's adherence to treatment may not be secured. Only about half of TB patients in Singapore are put on directly observed therapy (DOT). DOT is the only sure way of ensuring that the patient is adherent to treatment for the full duration of his course of treatment. As patients usually feel clinically well after a few weeks of effective treatment, some patients, understandably, show a reluctance to be fully compliant with another few months of treatment with drugs which may cause unpleasant side-effects in some persons.

Fortunately, drug-resistant TB is not a major problem in Singapore. Between 2005 and 2008, MDR-TB only

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† In conjunction with World TB Day

comprised between 0.1% and 0.4% of new cases, and between 1% and 3% of relapsed cases, in Singapore residents. No case of XDR-TB has been reported among Singapore residents.[3] The latter outcome is the result of the strong emphasis placed on good drug adherence through DOT in Singapore's TB control programme. The treatment progress of every case of TB is closely monitored by the National TB Registry under the programme.

However, there is a significant risk of TB arising from foreigners who come to Singapore to reside for work or study. Many of the source countries e.g. China, India, Indonesia, Philippines, Myanmar and Vietnam, have high incident rates of TB, and also not insignificant MDR-TB. In 2008, a total of 993 non-residents were notified as having tuberculosis. They comprised 500 long-term immigration pass holders residing in Singapore, and 493 short-term visitors.[3] A review of MDR-TB cases in Singapore from 2000 to 2006 reported 48 non-resident MDR-TB cases. The majority of the cases were from Indonesia (52%), Myanmar (17%) and China (10%).[4] Doctors therefore need to recognise that a foreigner with chronic cough may not only have TB, but also MDR-TB. A number of patients from the region also come to Singapore to seek treatment after failed TB treatment in their home countries. These patients may also have MDR-TB.

Aside from drug resistance, the problem of stigma and discrimination in the community in Singapore against tuberculosis patients poses a challenge to TB control. Patients are afraid of revealing to work colleagues and supervisors that they have TB, for fear of losing their jobs or being stigmatised. However, strong support from the workplace is important in ensuring that delays in diagnosis are minimised and that anti-TB drug treatment compliance is ensured through DOT. There should be a general awareness that anyone can develop TB disease and that TB can be cured.

Fortunately, HIV-TB co-infection is, for now, not a major problem in Singapore. Only about 3% of new TB cases in Singapore in 2007 and 2008 had HIV. The prevalence of HIV infection in Singapore is only about 2 in 1000 persons (0.2%), compared to more than 20% in some countries in sub-Saharan Africa. However, with global air travel increasing the mobility of people, this low HIV rate may not be sustainable, and the management of TB in HIV-coinfected individuals may challenge our TB control efforts.

The recent increase in Singapore's TB incidence rate is a clarion call for urgent action. We must reverse this trend. With the full cooperation and commitment of the healthcare and lay community, we will do it.

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