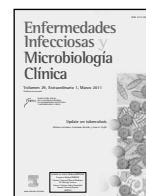




Enfermedades Infecciosas y Microbiología Clínica

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Introduction

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A priori, it seems surprising that in 2011 a medical journal in a developed country such as ENFERMEDADES INFECCIOSAS Y MICROBIOLOGÍA CLÍNICA (EIMC) should publish a special issue entitled "Update in Tuberculosis (TB)". However, as this issue stresses, the disease remains a major public health problem and one of the most important infectious diseases affecting mankind today.

According to estimates by the World Health Organization (WHO; fifteenth annual report)¹, about a third of the world's population (2 bn people) is infected with *Mycobacterium tuberculosis*; in 2009 there were 9.4 million new TB patients, with 1.3 million deaths among HIV-negative subjects and 0.38 million deaths among HIV-positives. The situation is particularly dramatic in the poorest areas of the world: 85% of these cases are concentrated in South-East Asia, Africa and the Western Pacific (35%, 30% and 20% respectively).¹ In developed nations, including Spain, because of the phenomenon of mass immigration from countries with high endemic rates of TB the incidence of the disease has not fallen as much as had been hoped.

TB control is based on complicated programs that focus on adherence to treatment (some of which date from as long ago as 1977), contact tracing, early diagnosis and surveillance. Unfortunately, few of the world's countries are able to implement these programs effectively. To make matters worse, the BCG vaccine has demonstrated very low efficiency in tuberculosis control. Since 2003, the Global Fund to fight AIDS, Tuberculosis and Malaria has made great efforts to promote the expansion of better control programs in countries with limited economic resources. As a result, important health benefits have been observed – for example, in the case of TB, the large number of lives saved after the implementation of directly observed treatment (DOT). It has been estimated that by the end of 2007, DOT would have saved about 1.63 million lives compared with no TB treatment, and more than 400,000 lives compared with non-DOT TB treatment.²

Identification of multidrug-resistant (resistance to at least rifampin and isoniazid) *Mycobacterium tuberculosis* (MDR-TB) is one of the cornerstones for global TB control as it allows early epidemiological and therapeutic interventions. In 2008, the WHO estimated that almost 500,000 new cases of MDR-TB occur globally every year, and placed special emphasis on the new cases of extensively drug-resistant TB (XDR-TB; MDR-TB plus resistance to any fluoroquinolone and any of the second-line anti-TB injectable

drugs) which have been reported in 46 countries in all five continents.³ However, trend data from different countries suggest that adequate treatment could reverse the spread of MDR-TB cases.⁴

Although TB has been relatively neglected in recent years, several organizations have set up product development partnerships (PDPs) which have made significant joint efforts to push TB research forward. Substantial resources from public, private, academic, and philanthropic sectors have been allocated to the development of new diagnosis tools (FIND), drugs (TB Alliance) and vaccines (AERAS), as is the case in other neglected diseases. In addition to these and other global institutions such as the WHO, IUATLD, TB-NET and CDC, several small publicly and privately-funded groups around the world are also heavily involved in TB research. As a result, the scientific community currently has a growing body of information on TB at its disposal.

This special issue of the journal EIMC presents an update on the most relevant and innovative aspects of TB control, with contributions from international scientific experts. Multidisciplinary approaches that include studies of TB epidemiology, comparative genomics, evolution and host-pathogen interaction are essential to the development of better tools and strategies to control and eliminate TB. This issue is divided into nine chapters, each of which focuses on the most important features of the disease –epidemiology, immunology and pathogenesis, diagnostics, new drugs and vaccines– and discusses the most promising recent results. It is our hope that the insights presented here will contribute to the control of this disease, and to its eventual elimination.

Conflict of interest

The authors declare they have not any conflict of interest.

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