

КЛИНИЧЕСКАЯ МЕДИЦИНА**ОРИГИНАЛЬНЫЕ СТАТЬИ***УДК 616-002.5***TUBERCULOSIS AS A GLOBAL HEALTH THREAT: GLOBAL AND REGIONAL EFFORTS TO CONTROL TUBERCULOSIS**© Ulrichs T.^{1,2}¹*Akkon-Hochschule für Humanwissenschaften, 36-38, Colditzstraße, 12099, Berlin, Germany*²*Koch-Metschnikow-Forum, Langenbeck-Virchow-Haus, 59, Luisenstraße, 10117, Berlin, Germany**Abstract*

Objection. To assess global epidemiological situation concerning tuberculosis infection as well as to assess global and regional efforts to fight TB.

Methods. Our study involved assessment of the current epidemiological situation concerning tuberculosis infection, factors that can aggravate its course as well as TB co-morbidities to provide an overview involving TB expert and politicians' activities at the global and regional level. In order to address current challenges of TB control and to join efforts to fight the disease, a series of symposia, conferences and meetings were organized in 2017, whose major contents and results as well as impacts on research and control issues in the TB field are presented in the following chapter

Results. The study involves such a global health problem as tuberculosis infection with a particular emphasis on multi-drug resistance and co-morbidities. In 1993, the World Health Organization declared TB as a global health emergency with two aggravating factors including increasing numbers of resistances per clinical isolate of *Mycobacterium tuberculosis* and increasing rates of multidrug resistant cases, and HIV-TB comorbidity. In our days, the WHO European Region is the only world region with increasing rates of new HIV infections.

Conclusion. To support joint activities of TB experts and politicians to fight the disease, a series of symposia, conferences and meetings were organized in 2017, whose major contents and results as well as impacts on research and control issues in the TB field are presented in the following article.

Keywords: tuberculosis, co-morbidity, Koch-Metschnikov Forum, World Health Organization

ТУБЕРКУЛЕЗ КАК ГЛОБАЛЬНАЯ УГРОЗА: УСИЛИЯ ПО БОРЬБЕ С ТУБЕРКУЛЕЗОМ НА МЕЖДУНАРОДНОМ И НАЦИОНАЛЬНОМ УРОВНЯХУльрихс Т.^{1,2}*Аккон-университет гуманитарных наук, Германия, 12099, Берлин, Гольдициштрассе, 36-38**Германо-Российский Форум им. Р.Коха и И.Мечникова, Лангенбек-Вирхов-Хаус, Германия, 10117, Берлин, Луизенштрассе, 59**Резюме*

Цель. Оценка глобальной эпидемиологической ситуации в отношении туберкулезной инфекции, а также в оценке глобальных и региональных усилий по борьбе с туберкулезом.

Методы. Исследование включало оценку текущей эпидемиологической ситуации, связанной с туберкулезной инфекцией, факторов, которые могут усугубить ее течение, а также сопутствующих заболеваний туберкулезом, чтобы предоставить обзор с участием экспертов по туберкулезу и деятельности политиков на глобальном и региональном уровне. Для решения текущих проблем борьбы с туберкулезом и объединения усилий в борьбе с ним в 2017 г. был организован ряд симпозиумов, конференций и совещаний, основное содержание и результаты которых, а также влияние на исследования и вопросы борьбы с туберкулезом представлены в следующей главе.

Результаты. Туберкулез сопровождает человечество в течение нескольких тысяч лет, становясь причиной значительного числа смертей от поколения к поколению. В высокоразвитых странах

Европы с 1990 г. туберкулез считается самым опасным заболеванием, характеризующимся отсутствием эффективного лечения. В 1993 г. Всемирная Организация здравоохранения объявила туберкулез как заболевание, потенциально угрожающее всему человечеству и требующее незамедлительных действий, при этом выделены два фактору, усугубляющих эпидемиологию туберкулеза, а именно, повышение числа случаев мультирезистентных форм туберкулеза, а также коморбидности, в частности ВИЧ-Туберкулез. В настоящее время только в Европейских странах наблюдается повышение числа случаев ВИЧ инфекции у больных туберкулезом.

Заключение. Для объединения усилий, направленных на борьбу с туберкулезом, ряд симпозиумов, конференций и встреч был проведен в 2017 г., цели и задачи которых, а также влияние на направления научных исследований и практическую деятельность представлены в данной публикации.

Ключевые слова: туберкулез, коморбидность, Форум им. Р. Коха и И.М. Мечникова, Всемирная Организация Здравоохранения

Introduction

Tuberculosis has accompanied mankind over millennia causing many deaths and accounting for the loss of many healthy life years from generation to generation. In industrializing countries of Europe since around 1900, tuberculosis has become the most prominent disease, and in the pre-antibiotic era, there was virtually no tool for a causative therapy (“therapeutic nihilism”). Then, with the development of effective anti-TB drugs in the time 1940s - 1960s, a combination therapy revealed to cure TB, and physicians, scientists and politicians counted on an eradication of TB within the next decade.

However, resistance against anti-TB antibiotics emerged and is now the major obstacle in efficiently control TB worldwide and especially in the WHO European Region. In fact, in 1993, WHO declared TB a global health emergency. Two developments aggravate the global TB problem in our days: 1) increasing numbers of resistances per clinical isolate of *Mycobacterium tuberculosis* and increasing rates of multidrug resistant cases, and 2) HIV-TB comorbidity, especially in countries of Sub-Saharan Africa. But also as an emerging epidemic in the successor states of the former Soviet Union in the WHO European Region. In our days, the WHO European Region is the only world region with increasing rates of new HIV infections.

The aim of the study was to assess global epidemiological situation concerning tuberculosis infection as well as to assess global and regional efforts to fight TB.

Methods

Our study involved assessment of the current epidemiological situation concerning tuberculosis infection, factors that can aggravate its course as well as TB co-morbidities to provide an overview involving TB expert and politicians’ activities at the global and regional level. In order to address current challenges of TB control and to join efforts to fight the disease, a series of symposia, conferences and meetings were organized in 2017, whose major contents and results as well as impacts on research and control issues in the TB field are presented in the following chapter. The reports cover the following symposia, conferences and meetings:

- 1) 11th Scientific Symposium of KMF and Akkon University on the occasion of World Tuberculosis Day 2017, Berlin, March 21 and 22;
- 2) Symposium of KMF and Central Tuberculosis Research Institute on immunological aspects of host pathogen interactions in human tuberculosis, Moscow, April 25 to 28;
- 3) Executive Board Meeting of the Stop TB Partnership, on the occasion of the G20 Health Ministers’ Conference, Berlin, May 14 and 15;
- 4) Tuberculosis Symposium of Koch-Metchnikov Forum, Akkon University and Free University of Berlin on the occasion of One Health Day 2017, Berlin, November 3rd;
- 5) First Global Ministerial Conference „Ending Tuberculosis in the Sustainable Development Era: Multisectoral Response” of WHO and the Russian Federation, Moscow, November 16 and 17.

The biggest challenge in fighting tuberculosis in the WHO-European Region is the fast growing rate of multidrug-resistant strains of *M. tuberculosis* in the region.

Multidrug-resistance, aggravated by an emerging HIV-epidemic in many of the successor states of the former Soviet Union, counteracts all efforts to efficiently control tuberculosis. Infact, we more and more lose control, and tuberculosis already gets virtually untreatable in some areas of our WHO-European

Region. Thus, the development of new drugs and novel vaccine candidates becomes more and more urgent.

To address these challenges, Koch Mechnikov Forum (KMF) and its partners in the Russian Federation initiated scientific collaborative projects in the fields of immunology, medical microbiology, epidemiology and public health. The first scientific partnership dates back to November 2001 and is still active: The characterization of host pathogen interactions in human tuberculous lung tissue is of great importance to better understand immunological processes that are correlated with protection against infection or disease. The Central Tuberculosis Research Institute in Moscow is specialized in dissecting human lung tissue and combine human and animal model approaches. Besides immunology, various projects with partners in St. Petersburg, Smolensk, Yekaterinburg, Toms and Novosibirsk aimed and still aim at addressing problems in TB diagnostics, in case notification and infection epidemiology. KMF and its partners developed a scientific network and a variety of publications.

As a platform for scientific exchange, the symposium on World Tuberculosis Day has been launched in March 2007. The first symposium was organized to prepare the Ministerial Forum on Tuberculosis in Berlin in October 2017 which then adopted the so-called Berlin Declaration on Tuberculosis (www.euro.who.int/__data/assets/pdf_file/0008/68183/E90833.pdf). The symposia following the first year 2007 which also commemorated the 125th anniversary of Robert Koch's famous lecture "Ueber Tuberculose" each had a specific scientific focus:

- 2007 125th anniversary of Koch's lecture and preparation of the Ministerial Forum and the Berlin Declaration on Tuberculosis;
- 2008 Current research topics in diagnostics, therapy and prevention;
- 2009 Public health intervention in TB control;
- 2010 Exchange of expertise in TB control between Eastern Europe and South Africa;
- 2011 Childhood tuberculosis;
- 2012 Evaluation of progress made in TB control four years after the adoption of the Berlin Declaration on Tuberculosis;
- 2013 Public private partnerships in diagnostics, therapy and prevention of TB;
- 2014 HIV-TB-comorbidity in different WHO world regions;
- 2015 Public health interventions and vaccine development; in collaboration with Tuberculosis Vaccine Initiative, TBVI;
- 2016 TB and migration;
- 2017 MDR-TB in Eastern Europe;
- 2018 Political framework to end TB.

Today, Koch-Metchnikov TB symposia on the occasion of World Tuberculosis Day are well-organized scientific meetings with both interactions among TB experts and scientists as well as with representatives of politics, public private partnerships, and other decision makers including those from the World Health Organization.

Results and its discussion

In the context of these activities and their outcomes we should stress that the results of each year's TB Symposium are reported directly to the World Health Summit in Berlin (www.worldhealthsummit.org, WHS). In 2017, it was agreed that the political and scientific discussions will be continued in an own workshop in the upcoming World Health Summit 2018.

The paper of the parliamentarians of the Global TB Caucus was supported by KMF and Akkon University together with many other NGOs in the field of TB research and control. It was submitted to the German Federal Minister of Health, Hermann Gröhe, who hosted the health ministers' conference of G20 in May 2017.

In an open letter to the G20 member states, a consortium of many non-governmental and scientific organizations (among those the Koch-Metchnikov-Forum and the Akkon University for Human Sciences) that are active in TB research and control asked for a strong G20 statement on the necessity to strengthen efforts in fighting antimicrobial resistances and thus also TB.

All of these joint efforts finally resulted in highlighting MDR-TB as a major global health threat in the final document of the G20 Summit in Hamburg in July 2017 (www.g20germany.de/Content/EN/_Anlagen/G20/G20-leaders-declaration.pdf, page 9).

The 11th TB Symposium, 2017 as well as the workshop at the World Health Summit and various other meetings and conferences (among those the VI. Congress of Phthisiatrists in the Russian Federation)

prepared the First Global Ministerial Conference entitled “Ending Tuberculosis in the Sustainable Development Era: Multisectoral Response” in Moscow in November 2017.

First Global Ministerial Conference, Moscow, November 15 to 17, 2017, “Ending Tuberculosis in the Sustainable Development Era: Multisectoral Response” was of great both research and political significance. The first Global Ministerial conference (www.who.int/tb/endtb-sdg-ministerial-conference/en/) took place 10 years after the WHO European Ministerial Forum on TB (October 2007, which adopted the Berlin Declaration on Tuberculosis, see attachment 1) and was the attempt to widen the political support in fighting tuberculosis and thus reaching the sustainable development goals in this regard (SDG #3). The SDGs followed the millennium development goals in 2015 and combine environmental and developmental goals on the global level to be reached by 2030. Within SDG #3, the health issues are summarized, among which the fight against tuberculosis, HIV/AIDS and malaria plays an important role.

The Conference was opened by the General Director of WHO Tedros Ghebreyesus, by the regional director of the WHO European Region Zuzanna Jakab and the Russian Federal Minister of Health Veronika Skvortsova. President Vladimir Putin gave some welcome remarks and referred to the G20 Summit Declaration (see attachment 4), the long tradition of international collaboration in medicine and healthcare and stressed the necessity of such collaborations to reach the conference’s targets.

More than 1000 physicians, scientists, political decision makers and representatives of NGOs from over 100 countries participated in the Conference, among them 74 ministers. Koch-Mechnikov-Forum as a German non-governmental organization and the Akkon University of Human Sciences as a scientific institution active in the field of TB research were represented. The sessions and workshops were of high level quality, and the meeting with collaboration partners from other non-governmental organizations (e.g. FIND and TB Alliance), private companies (e.g. Otsuka) and partner universities and research institutes (e.g. North Western State Medical University, St. Petersburg; Central Tuberculosis Research Institute, Moscow) could be used to discuss the current joined projects and efforts in TB research.

At the end of the conference, the Moscow Declaration to End TB was adopted (www.who.int/tb/features_archive/Moscow_Declaration_to_End_TB_final_ENGLISH.pdf). The results of the Moscow Conference also form the basis for the High Level United Nations Meeting in New York in 2018, in which the global challenges of fighting TB will be discussed on the political level.

Conclusion

Both research and political efforts to fight TB are rather promising and demonstrate that TB experts as well as parliamentarians and governments of the world clearly realize global threats of tuberculosis and are aimed at joint efficient activities. The momentum of the political awareness of tuberculosis as a global health topic is used by Akkon University and Koch-Mechnikov-Forum by dedicating the 12th Scientific Symposium on the occasion of World Tuberculosis Day 2018 to the political framework necessary to efficiently organize global TB control efforts.

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