

Mycobacterial Diseases

Alfred Allan Duker*

Kwame Nkrumah University of Science and Technology, Ghana

It is estimated that new cases of Tuberculosis occur annually, and it is the African continent that has the blunt of the infections. It is one of the major causes of death worldwide. The death toll is put at 1.8 million per year [3]. In general, it is a worldwide problem with its toll on the poorest countries of the world.

Vaccines and drugs being developed for the disease are also being tested to evaluate not only their efficacy but also their safety. The need, however, is much more in the developing world and clinical trials of this nature are appropriate. It also implies the development and setting up of well-equipped laboratories as well as research that will look at the lung. This also implies the search for new diagnostic methods.

It is important to obtain detection methods that are efficient, simple, rapid and low cost, which can be available to laboratories of most developing countries where such a disease is prevalent. Unfortunately, methods developed over a century ago lack certain required sensitivity such that delays occur especially in receiving results. Consequently, initiating treatment is also delayed and eventually following patients may not be possible. Although such low cost but efficient methods are mentioned [5] the availability of the technology in laboratories in low-resourced countries are important.

The study of genomics has brought some enlightenment in the realm of the Mycobacteria (i.e., *M. ulceran*, *M. leprae*, *M tuberculosis*). Such a study has not only helped to expand understanding of the pathogenesis of mycobacterial diseases but also to the extent that vaccines have been developed for clinical trials. The study progress has come as far as the development of antibiotics for the treatment of the diseases.

Furthermore, the study of genomics [6] has revealed the biochemical pathways of *Mycobacterium ulcerans* (MU) as well as *Mycobacterium tuberculosis* (MT) with their shared peculiarities useful for effective drug production. While the revealed toxin of MU, known as mycolactone has given way for the development of improved diagnostics, the shared biochemical pathways with MT is also useful for the development of drugs. The same goes for *M. leprae*.

The control of Mycobacterial disease is important when considered in the light of HIV positive patients. The question of drug resistance strains of mycobacteria (e.g., Tuberculosis) becomes very relevant and demands careful approach in the light of the fear that such strains could spread [2]. Therefore this calls for special control measures, for example, new diagnostics, development of new drugs and effective vaccines.

The advent, however, of molecular biology has brought knowledge and understanding of the very basis of drug resistance especially in TB, thus providing capabilities and better diagnostics as well as detection of drug resistant strains. All together the cost for provision

of such knowledge, tools and diagnostics is too high for low-resourced countries.

If the issue of cost resurfaces in the provision of infrastructure in terms of the provision of laboratories, tools and diagnostics, what then should be done in such low-resourced countries where also the disease is prevalent? True, the provision of health facilities and therefore health care cannot be free. It is, however, the policy of governments and health care providers to completely eradicate the disease or bring the down to the barest minimum.

Interestingly, the poor are the most vulnerable and most affected by such mycobacterial diseases. They may not use the health facility due to cost implications but resort to local or traditional healers where charges are affordable. For an example, in *Mycobacterium ulcerans* infection, patients may present themselves for treatment during the late stages of the disease when the traditional healer had given up. In many cases of this kind the only option sometimes is the removal of the affected limb, which would not have been the case had it been presented earlier.

In 1999, health experts in Ghana, wishing to know the extent of MU infections offered cash incentives to all who could report to a Centre with the disease for diagnosis. The result was overwhelming. That was the year in which the greatest number of patients reported for diagnosis. From that time intensive educational campaign was launched in some endemic districts of the country, aimed at eliminating the disease.

In Mali, trekking of long distances to health centres coupled with other socio-economic reasons made efforts for TB detection low until 2004 when the World Food programme agreed to support with flour distribution (i.e., food incentive) to TB patients [1]. This was to allow for diagnosis, sputum control, initiating treatment and control. Under this condition patients offered themselves for control and treatment due to the incentives, for it compensated their transport cost to the health centres. By 2005 patients with no sputum results dropped from 8% to 2% confirming that the distribution of flour played an important role in supporting TB treatment and eradication.

It comes to light that reduction of poverty and health education campaign can help in reducing the rate of infection of mycobacterial diseases. The question is how long can these supports be sustained?

*Corresponding author: Dr. Alfred Allan Duker, Kwame Nkrumah University of Science and Technology, Ghana, E-mail: duker@alumni.itsc.edu

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