

Miscellaneous

Will Precision Medicine Ever Be a Possibility for Controlling Tuberculosis?

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Not long ago, the global epidemic of tuberculosis, the so-called “Great White Plague”, was practically eradicated by energetic medical practice, that is, by providing *Bacillus Calmette-Guerin* (BCG) vaccination for newborns, as well as achieving early diagnosis and proper treatment of patients. Unfortunately, though, recent episodes of tuberculosis have notably re-emerged along with cases of chemotherapeutic resistance.¹

There are several causes of such incidents:

- (a) Epidemics of drug-resistant causative agents;
- (b) Withering enthusiasm for controlling the disease, such as lagging public health activity in the proper provision of BCG vaccination, and in effective therapeutic practice, thereby, enabling cases of drug resistance and treatment failure to become sources of infection;
- (c) The failure of radical means to eradicate the infection, as compared with global efforts to eradicate leprosy and small-pox.

With regard to public health activity, apart from revisions in general practice and/or seeking new inventions, new philosophies apply. In particular, owing to advances in molecular and genomic medicine, new fronts are opening for “precision medicine” to target a variety of diseases, including tuberculosis, at the molecular levels.

In the case of tuberculosis, decisions are based on knowledge of innate resistance, susceptibility and possibly various existing acquired factors.²⁻⁸ In this regard, mutated portions, or malicious genes present in the DNA helix strands may possibly be removed by molecular technology, such as the CRISPR/Cas system.^{9,10} The named practice can be instituted prenatally or on later occasions, as necessary.

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