

EDITORIAL

MALIGNANT TUBERCULOSIS

Tuberculosis, a disease of antiquity, has killed more people than Black Death, Leprosy and AIDS. Tuberculosis has felled an estimated one billion people around the world in the past two centuries and the fatalities continue despite effective chemotherapy. Tuberculosis is one of the oldest diseases known to affect the humanity. Human bones dating back five millennia show the telltale pitting of tuberculosis. Mummies from ancient Egypt show tubercular decay in their spines. The Greek called the disease phthisis (consumption) emphasizing the general wasting associated with chronic untreated cases.¹

Franciscus de Bo Sylvius portrayed the course of the disease in his Opera Medica of 1679. Two decades later, a public health edict from the republic of Lucca in Italy recognized the infectious nature of the disease in his publication; "Henceforth, human health should no longer be endangered by objects remaining after the death of a consumptive. The names of the deceased should be reported to the authorities and measures taken for disinfection". Benjamin Martin, an English physician and author of 'A new theory of consumption' hypothesized that tuberculosis resulted from the action of wonderfully minute "living creatures". He further theorized that close contact with the consumptive including frequent conversation so close as to draw in part of the breath he emits from the lungs was enough to transmit the disease. In 1865, a French military doctor, Jean Antoine Villemin demonstrated that the disease could be passed from humans to cattle and from cattle to rabbits.

A few years later, in 1882, Robert Koch demonstrated conclusively that a bacterial infection caused TB. The excitement that greeted Robert Koch's eventual demonstration of the bacterial nature of the disease was due to the fact that for the first time the killer of generations had a face.¹

Medicine could finally work towards the cure. It was about a century of hard work for physicians and pharmaceutical industry that saw development of state of art treatment for this killer. In the second half of the 20th century, rates of the tuberculosis infection dropped throughout the developed world and this was because of the evolving chemotherapeutic agents. In 1987, American Medical Association's advisory council for the elimination of tuberculosis projected that by 2010 the disease would become extinct worldwide like smallpox. Yet the warning signs that this would not happen were already there. By 1985, for the first

time, the number of new cases of tuberculosis stagnated and subsequently began to grow.

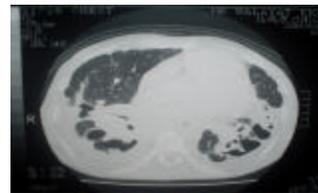
The World Health Organization now calls tuberculosis "a fire raging out of control" in developing nations, among the poor, in prisons and in people with AIDS.² Worldwide, someone becomes infected with tuberculosis every second. While the scientists worked day and night to develop the defense and then offence against this assassin, the mycobacterium was also at work to develop its deterrence. The result was emergence of multi-drug resistant (MDR) tuberculosis. As if not satisfied with even this, the mycobacterium formed a strategic and deadly coalition with HIV. Ever since then, it is a success story for the mycobacterium. WHO estimates that HIV produces 1.4 million cases of tuberculosis each year that otherwise would not appear.

Pulmonary tuberculosis is caused when droplet nuclei laden with tubercle bacilli are inhaled. One bout of coughing or laughing would release up to 3500 bacilli in air, in the form of droplets, and stay suspended for up to 4-6 hours thus making the people an easy prey of this highly contagious disease.³

Tuberculosis has varied presentations, sequelae and complications in the thorax. Among these, whole lung tuberculosis, tuberculosis presenting as a mass lesion and extensive disease are the most alarming.⁵ The greatest tragedy is the extensive form of the disease with irreversible structural distortion, fibrosis, cavitation, bronchiectasis, formation of perilesional emphysema and total lung destruction.

Extensive tuberculosis behaves like malignancy, as rapidly advancing illness with wasting, cachexia and bleeding

(hemoptysis). It has the penchant to disseminate to adjacent structures like pleura, lymph nodes or distant organ systems like bones and brain. Akin to a malignant lesion, chemotherapy is suboptimal, surgical intervention is impossible due to extensive involvement, leading to end stage lung disease with cor pulmonale, respiratory failure and death.



Pulmonary tuberculosis was romanticized in the arts and music of the 19th century. The deaths of Mimi in Puccini's La Boheme and Satine in Moulin Rouge are portrayed as romantic tragic events. However, end stage tuberculosis is anything but glamorous and Mimi and Satine exposed everyone around them to danger with each breath. The dying faced night sweats, chills and paroxysmal cough, spreading the disease to other organs of the body, resulting in the wasting away that led helpless bystanders to name the disease consumption.

Around 460 BC, Hippocrates identified phthisis or consumption in late stage as an incurable disease of his age. Because of that he advised his followers and students against treating such patients to avoid damage to their reputation. Yet in the 21st century it still remains the most devastating dilemma,

where patients mostly young beg for help while physicians powerlessly watch them die.



It is with this milieu that at the time of diagnosis of Pulmonary TB, the quantification into minimal, moderately advanced with and without cavitation and far advanced is imperative. As treatment with standard drugs in disseminated TB, tuberculous-lymphadenitis, and moderately advanced with cavitation will not produce a rapid cure, causing



a slowly responding patient to inevitably acquire irreversible structural damage. It is in this perspective that early expansion of therapy in moderately advanced tuberculosis will be a paradigm shift in the strategy of treating such patients upfront with effective, and offensive regimen, with a resolve to cure them and thus save them from end stage 'malignant tuberculosis'. If this hypothesis is perceived correctly it will be an epoch making change in the final outcome of managing tuberculosis.

It will truly reflect the aspirations of the man who first discovered mycobacterium tuberculosis and remained the intellectual forerunner of tuberculosis control. Such was his fervor for finding a cure that he finished his Nobel lecture by reasserting his optimism: "The fight has been ignited fully and the enthusiasm for this goal is so broad that I am not afraid that it will seize again. If we continue to work in such a powerful way victory will be achieved".⁶



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