

Tuberculosis a disease that created and shaped thoracic surgery

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Abstract: Today it is incredible to think that an infectious disease, Tuberculosis (TB) as the disease that shaped Thoracic Surgery. The history of TB has so far evolved similarities with that of the mythological Phoenix, where the resurgence of this never completely eradicated “Insidious Disease” has now re-emerged and brought new challenges to modern medicine that of multi drug resistance. The probability of success, in treating complicated multi-drug resistant (MDR) TB pushing us back to the pre-antibiotic era, now depends on several factors: (I) optimal antibiotic management; (II) patient compliance; (III) multi-disciplinary teamwork; (IV) experience in carrying out “not-routine” surgical procedures; and finally (V) ability to offer long term patient hospitalization, frequently months, without bureaucratic and economical problems. The probability of good patient outcome is higher when all of these criteria are satisfied.

Keywords: Tuberculosis (TB); broncho-pleural fistula; Open Window Thoracostomy (OWT)



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Pulmonary Tuberculosis (TB) was the disease that spawned Thoracic Surgery and Respiratory Medicine and recently was defined “the phoenix of Thoracic Surgery” (1). This Comparison highlights the resurgence of a disease that was never completely eradicated and that was in the past called the “Insidious Disease”. However, we must remember another, less famous, ornithological explanation of the origin of phoenix myth based on the observation of some great birds who have the habit of flapping their wings on fire smoke to kill parasites (in fire reborn life free of parasites). In this case, however TB, has had a new lease of life with the HIV pandemic, poorly funded national TB programmes and globalization. Apart from this simply speculative little curiosity, today, many doctors think it is incredible that TB was the disease that created and formed, in the decades, the Thoracic Surgeon and yet this fact is evident in all the centers where the surgery for TB was daily primary practice. On the other hand, the great enemy “Lung Cancer” is not even “old enough” if we consider that at the beginning of the 19th century it was counted amongst the rare tumors (2). The beginning of its explosion

coincided with World War I, with the spread of cigarettes in packets among the soldiers (3), and with all issues related to urbanization and air pollution.

Many folk remedies existed for treatment of TB. One of the most popular myths was of a change of climate and diet. Ultraviolet light had been found to kill acid-fast bacilli in the laboratory, and therefore patients were encouraged to spend time exposed to sunlight, it is only in recent years that we have been able to prove that it is sunlight effect on vitamin D levels which improves immunity against TB. Physical activity in children supposedly conferred resistance. The first Sanatorium for TB was established at Gobersdorf in Germany and another famous sanatorium was in Davos, Switzerland, the highest town in Europe. Between 1932 and 1940, at 1,000 m above sea level in the Alps of Northern Italy, the largest sanatorium in Europe (Eugenio Morelli Hospital) was built in Sondalo with its 9 blocks each with 8 floors, covering an area of 350,000 m² on a road network of 12.5 km and occupying a volume of 650,000 m³ it was aptly called “The Sanatorium City, with its 3,500 beds, cinema, shops and a post office, had a larger population

than its nearby towns and was immortalized in a Vittorio De Sica film “A short holiday”. The fresh mountain air, the picturesque Alpine landscape with its green forests and alpine meadows and its south facing orientation was described as being in a bright amphitheatre (4). High altitude, bed rest, exposure to the sunlight and good nutrition were pursued as therapeutic options. In the pre-antibiotic period, therapies against TB were ineffective and a major role was played by the surgery and largely by preventing the disease. Despite the hundreds of sanatoria built around the world, no tangible scientific proof that sanatorium therapy had any influence on the disease exists. Sanatorium therapy, however, concentrated patients in one place and so contributed to the study of the disease. The annals of Morelli Hospital are full of descriptions about surgical operations that were routine and today would just make us cringe. The techniques of thoraco-myoplasties, buckling and iatrogenic pneumothorax are just some examples of how and in what measure the surgeon could “demolish” a patient. The basic idea was valid, reducing the supply of oxygen to the tuberculous cavities to make survival difficult for the obligate aerobes organisms that are mycobacteria. Various methods of collapse-therapy, like the “therapeutic pneumothorax of Forlanini” introduced in 1906 and the “intracavitary aspiration of Monaldi” today are full of historic charm. Note how these methods were in apparent pathophysiological contradiction with other therapeutic convictions such as “air therapy” which consisted in forcing the patient to breathe outdoor mountain air (this also occurred during bitterly cold winters). The development of anti-mycobacterial therapy, in the second half of the last century, was a “godsend” for patients and a professional revolution for Thoracic Surgeon who had already understood the need to “sharpen the blades against cancer”, the new enemy whose incidence was increasing more and more! With the new medical therapy the role of the Surgeon gradually decreased to the treatment of complications of TB: destroyed lobes and lungs, tuberculous pleural empyema with or without fistula, hemoptysis, etc., bronchoconstriction. In our daily activities we can confirm that the “new explosion” of TB, is due mainly to the migratory flows from highly endemic countries in our hospital (mainly countries from Eastern Europe and South Asia). Cases of resistant infections are also increasing. In addition to multi-drug resistant (MDR) and extensively drug resistant (XDR) bacterial strains, we now must fight against infections that have very few chemotherapeutic options, a kin to the TB we saw in the pre-antibiotic era. The appearance of these resistant strains is due to a selection

common to all germs and to an incorrect use of medical therapy (monotherapies, insufficient duration, poor patient compliance, etc). With the resurgence of the disease and the development of resistant strains and more complex patients, the Thoracic Surgeon must learn to deal with the “phoenix reborn” again. The battle is increasingly complex and treatment of TB requires a close collaboration between the Phthisiologist and the Surgeon. Medical therapy of resistant forms must be handled by experts in the field and the corresponding surgical treatments cannot be improvised. With respect to Minimally Invasive Surgery, our group is puzzled about the views expressed by some colleagues (1); we are doubtful that the Minimally Invasive Surgery can afford to broaden the surgical indications of TB. In fact in our experience, we exceptionally see localized tuberculous lesions that could be treated by Video Assisted Thoracic Surgery (VATS) resections. In our experience Minimally Invasive Surgery has, at present, only a diagnostic role (VATS for pleural tuberculous empyema, speleoscopy for thoracostomies, etc) or therapeutic role in certain specific complications (rigid bronchoscopy for temporary or palliative treatment of broncho-pleural fistulas). One of the most important complications of TB is the tuberculous pleural empyema for which the drainage is almost never sufficient and often we have to perform complex procedures such as packaging of Open Window Thoracostomy (OWT) that must be carefully managed. The closure of OWT may require several months. The presence of any broncho-pleural fistula is a real challenge for the Thoracic Surgeon who has to manage different demolitive and reconstructive methods to get the best possible final result. The probability of ultimate success depends on several factors: (I) “no less than optimal” management of antibiotic therapy; (II) maximum compliance of the patient who must really be “patient”; (III) effective multidisciplinary teamwork; (IV) experience in carrying out “not-routine surgical procedures”; and finally (V) ability to keep the patient hospitalized for a long time, sometimes months, without bureaucratic and economical problems. The probability of good patient outcome is higher when all of these criteria are satisfied.

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