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SURGERY FOR PULMONARY TUBERCULOSIS A TERTIARY CENTRE EXPERIENCE

Cardiothoracic Surgery

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ABSTRACT

This is a retrospective study undertaken on patients with Pulmonary Tuberculosis who underwent surgery for post tuberculous sequelae. The study was undertaken between January 2000 and January 2020 in the department of cardiothoracic surgery of King George hospital affiliated to Andhra Medical College. Data is obtained from medical records about demographics, presenting symptoms, indication for surgery, preoperative evaluation and operative procedure, postoperative complications, and follow-up. **Conclusion:** Medical management remains the treatment of choice in the management of pulmonary tuberculosis, but surgery is being offered as a line of management of post pulmonary sequelae to improve quality of life. Surgery is also a part of treatment protocol in cases of drug resistant pulmonary tuberculosis.

KEYWORDS

Surgery, pulmonary tuberculosis, drug resistance

INTRODUCTION

Tuberculosis (TB) is an infectious disease usually caused by Mycobacterium tuberculosis (MTB) bacteria. The main cause of TB is Mycobacterium tuberculosis (MTB), a small, aerobic, nonmotile bacillus. About 90% of those infected with M. tuberculosis have asymptomatic, latent TB infections (sometimes called LTBI), with only a 10% lifetime chance that the latent infection will progress to overt, active tuberculous disease. Tuberculosis may infect any part of the body, but most commonly occurs in the lungs known as pulmonary tuberculosis. Extrapulmonary TB occurs when tuberculosis develops outside of the lungs, although extrapulmonary TB may coexist with pulmonary TB.

TB infection begins when the mycobacteria reach the alveolar air sacs of the lungs, where they invade and replicate within endosomes of alveolar macrophages. Macrophages identify the bacterium as foreign and attempt to eliminate it by phagocytosis. However, M. tuberculosis has a thick, waxy mycolic acid capsule that protects it from the toxic substances released during phagocytosis. M. tuberculosis is able to reproduce inside the macrophage and will eventually kill the immune cell.

Tuberculosis is classified as one of the granulomatous inflammatory diseases. Macrophages, epithelioid cells, T lymphocytes, B lymphocytes, and fibroblasts aggregate to form granulomas, with lymphocytes surrounding the infected macrophages. The granuloma may prevent dissemination of the mycobacteria and provide a local environment for interaction of cells of the immune system. Bacteria inside the granuloma can become dormant, resulting in latent infection. Another feature of the granulomas is the development of abnormal cell death (necrosis) in the center of tubercles. To the naked eye, this has the texture of soft, white cheese and is termed caseous necrosis.

If TB bacteria gain entry to the blood stream from an area of damaged tissue, they can spread throughout the body and set up many foci of infection, all appearing as tiny, white tubercles in the tissues] This severe form of TB disease, most common in young children and those with HIV, is called miliary tuberculosis. People with this disseminated TB have a high fatality rate even with treatment (about 30%)

In many people, the infection waxes and wanes. Tissue destruction and necrosis are often balanced by healing and fibrosis. Affected tissue is replaced by scarring and cavities filled with caseous necrotic material. During active disease, some of these cavities are joined to the air passages (bronchi) and this material can be coughed up. It contains living bacteria, and thus can spread the infection. Treatment with appropriate antibiotics kills bacteria and allows healing to take place. Upon cure, affected areas are eventually replaced by scar tissue.

Tuberculosis became a medically manageable disease with advent of multidrug chemotherapy. With concentration on early diagnosis and effective DOT management at village level involving health workers, Indications for surgery for pulmonary tuberculosis are very few.

METHODS AND MATERIALS

This is a retrospective study of 10 years between 2010 and 2020.Data is obtained from medical records of patients who underwent surgery in the department of cardiothoracic surgery KGH/AMC. The patients were evaluated, diagnosed, and medically treated at the Hospital for T.B and Chest diseases. Patients considered to benefit from surgery were referred to the department of Cardiothoracic Surgery, King George Hospital. A total of 70 patients underwent surgical procedure Indications to surgical management include massive hemoptysis, recurrent hemoptysis bronchiectasis, empyema. bronchopleural fistula, and aspergilloma, pleural fibrosis, destroyed lung. A total of 70 patients underwent surgery for pulmonary tuberculosis in the stated period. The data was analyzed for demographics, indications for surgery, procedure underwent, post-operative complications and mortality if any.

All the patients were evaluated and prepared by a detailed prescribed protocol. An informed consent was obtained from patient and his legal relatives. They were explained in detail about the patient's condition, need for surgery, complications involved, associated morbidity and mortality of surgery.

Fitness for surgery was evaluated. Nutritional status was a priority. They were put on high protein diet for a month before surgery, except for massive life-threatening hemoptysis, surgeries were usually well planned.

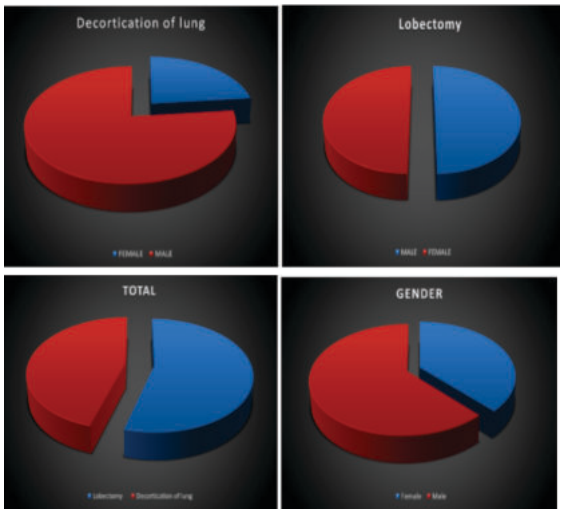
Radiological evaluation with chest X- ray and CT scan was done to know the extent of disease and plan surgical procedure. Bronchoscopy was not a routine procedure done only occasionally to assess airway and when requested by anesthesiologist.

Preoperative antibiotics were not routine. Chest physiotherapy was routine. Physiotherapy was instituted three weeks prior to surgery and continued post operatively.

The surgical procedures done were mostly decortications and lobectomy. Pneumonectomy was done for a few patients with a destroyed lung. Patients with bronchopleural fistula underwent an added myoplasty to help heal stump better.

Post operative complications were negligible and mostly restricted to extended air leaks which were managed conservatively. This can be attributed to meticulous attention to detail in the perioperative period.

Diagrams



DISCUSSION

Surgery was the treatment for Pulmonary Tuberculosis in the early history of the disease. Collapse therapies with artificially created pneumothorax was one of the earliest interventions, the principle behind was to deprive oxygen bacterium. Thoracostomies, thoracoplasty, pneumonectomy and lobectomy were other procedures offered. Infant surgery predates discovery of mycobacterium. With introduction of medical management in 1952 surgery took a backstage, but with emergence of MDR and XDR variants surgery has made a comeback.

In our hospital surgery was offered to those patients who developed debilitating sequelae to pulmonary tuberculosis like empyema, destroyed lung, bronchopleural fistula to improve quality of life and as a life saving measure in massive hemoptysis.

Decortication relieves the entrapment of lung, helps in improved aeration of lung, and improves drainage of bacterial secretions prevents secondary infections.

Lobectomy pneumonectomies remove diseased lung that is a source of infection. In cases of extended drug resistant variants early intervention helps preserve healthy lung and reduce affected lung and helps in early recovery of patient and prevents further spread of drug resistant variant.

In our institution surgery is offered as a treatment modality to treat secondary manifestations of pulmonary tuberculosis. Surgery offers a minimal risk with improved standards of care and patient goes home to lead a productive life.

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