UNIVERSITY OF MEDICINE AND PHARMACY FROM TARGU-MURES DOCTORAL SCHOOL

CONTRIBUTION TO THE COMPLEX MEDICO-SURGICAL TREATMENT OF LUNG SUPPURATIONS

DOCTORAL THESIS

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Lung suppurations are still a problem of modern medicine, mainly due to the increasing number of patients and the result of the treatment, which are far from being good. A main characteristic of lung suppurations is the lack of randomized studies which can offer statistical arguments for a certain therapeutic approach. Major surgery for lung suppurations remains reluctant to what is now called “evidence-based medicine” and is still performed on the basis of personal experience and local protocols. This Ph D thesis is based on the work and studies performed in Surgical Clinic II (IV) University of Medicine and Pharmacy from Târgu-Mureș, Romania, which has a long tradition and some original contributions in the management of lung suppurations.

PART 1 (GENERAL PART) is dedicated to the following subjects concerning the study of lung suppurations:
1. Short history.
2. Pulmonary parenchima in severe thoracic suppurations.
3. Defense mechanisms against infection.
5. Lung suppuration – epidemiology, etiology and pathogenesis.
7. Clinical picture and paraclinical examinations in lung abscesses.
9. Medical treatment in lung abscesses.
11. Surgical treatment in lung abscesses.

PART 2 (SPECIAL PART) is dedicated on different studies made on specific topics of lung abscesses treatment. All the studies were made on patients treated by the same medico-surgical team in the Surgical Clinic II (IV) University of Medicine and Pharmacy from Târgu-Mureș.

1. Actual problems of surgical treatment of primary lung abscesses are a critical study on 162 patients who underwent surgery during 01.01.1985 – 31.08.2009. In 81 cases we performed pulmonary resections (nonanatomical resections – 63 cases, anatomical resections – 18 cases). In 54 cases we performed “applatisation-plication”, Boțianu procedure, especially in patients with lung abscesses and with severe pulmonary disfunction (VC<40%, FEV1<40%).

In 27 cases we performed Boțianu thoracopleuroplasty for remnant pleural cavities, after initial pleurotomy or thoracocentesis for lung abscesses broken in pleural space associated with pleural empyema.

The overall severe morbidity was 27,1%, resulting in a 14,2% mortality. The most important causes of postoperative exitus was the uncontrolled sepsis and cardiac complications.

Functional evaluation in patients with lung abscesses “applatisation-plication”, showed a significant difference between pre- and postoperative values of VC (p<0,0001) and FEV1 (p: 0,0136).
Elective surgery in lung abscesses remains lobectomy, but in many patients, performing a major lung resection is impossible due to severe lung dysfunction or to local anatomical conditions (secondary inflammatory changes). In this cases “applatisation-plication” is a life saving procedure, being the only procedure which improves lung function.


Initial subchapter (2.1.) is a retrospective analysis of 215 patients with suppurated, cavitary lung cancer, in which we performed curative resections in only 61 cases and palliative procedures in 154 cases (anatomical noncurative resections in 29 cases, nonanatomical resections in 26 cases, subtotal tumoral resection 18 cases, “applatisation-plication” without direct closure of the bronchial fistulae in 36 cases). In 34 cases suppurated, cavitary lung cancer was associated with pleural empyema.

In patients with unresectable suppurated lung cancer, palliative “comfort” procedures, such as “applatisation-plication” offers a technical opportunity for the surgeon and chance of survival for the patient. Palliative procedures in lung suppurated cancer, unfortunately the most common procedures in Romania in surgical treatment of lung cancer, aiming restoring the quality of life, being in concordance with the principle of un abandoning of the neoplastic patient.

The second subchapter (2.2.) is a retrospective analysis of 116 patients with suppurated hidatic disease of the lung. In 103 cases we recorded single pulmonary hidatic cyst, for which we performed cystectomy+pericystectomy followed by plication of the remnant cavity without direct closure of the bronchial fistulae, Boțianu procedure in 59 cases and bronchial reinforcement in 6 cases. In another 33 cases we performed nonanatomical resections and in 5 cases we performed anatomical resections. We recorded 11 cases of multiple unilaterale hidatic disease of the lung, 1 case of bilateral suppurated hidatic cyst and 1 case of lung and hepatic hidatic cyst.

The last 3 subchapters are detailed case-reports, with particular clinical situations or procedures; all of them are dealing with rare situations. some of them being reported for the first time in our country: “applatisation-plication” Boțianu procedure, without direct closure of the bronchial fistulae in a case of lung abscess secondary to a pulmonary sequestration (2.3); “applatisation” + plombage of the remnant surface with Tachocomb®, without direct closure of the bronchial fistulae, in a case of lung suppuration secondary to pulmonary tuberculosis (2.4.); left pneumonectomy and thoracomediastinal plication in the same surgical procedure, for bronchiectatic destroyed lung (2.5.).

3. Bacteriologic study on patients with lung abscesses undergoing major surgery. Our data on operated patients show predominance of *Staphylococcus aureus* (22.5%), *S. coag. negative* (20,11%), *Str. alfa hemoliticus* (21,3%), *Pseudomonas* (21,4%), *Acinetobacter spp.* (17,8%) and *E. coli* (14,3%); *Klebsiella, Enterobacteriile* and *Enterococ* were encountered with an incidence between 5 and 10%. 44% of cultures remained sterile, the other ones having an average of 2,1 bacteria identified/patient. The antibiotic resistance showed interesting results (high antibiotic resistance in many
Currently used antibiotics); a careful monitorisation would allow improved local politics, with immediate clinical and economic impact.

4. **Lung abscesses in intra-abdominal suppurations with intrathoracic complications** is an analysis of an group of 10 patients with severe intrathoracic complications secondary to subdiafragmatic suppurations who underwent thoracotomy as the first stage of the treatment (in 9 patients; in 1 patient we performed initially abdominal approach – generalized peritonitis by intestinal fistulae after appendicectomy + bilateral empyema + right lung abscess). This group is characterised by a high morbidity and mortality. Based on our experience, we made a change in the order of the operative steps, with the aim to reduce the operative shock and blood losses.

5. **Actual problems of surgical treatment of lung aspergillosis** are a critical study on 18 patients with lung aspergilloma, who underwent surgery between 1985-2009. In 17 cases lung cavitation was caused by tuberculosis and in one case, initial lung lesion was an hidatic cyst. In 2 cases we encountered active tuberculosis. In 12 cases we performed nonanatomical resections; in 6 cases we performed „applatisation-plication” of the remnant cavities, without direct closure of the bronchial fistuale, Boțianu procedure, especially in patients with VC and FEV1 < 40%. We registered only 1 death, at 1 year and 6 months after surgery, and major morbidity was encountered in the same patient: remnant pleural cavity after applatisation-plication for double pulmonary aspergilloma, resolved by 10 ribs thoracopleuroplasty 1 month after initial surgery and subsequently Eloesser procedure, at 3 months after initial surgery.