

Case report - Thoracic non-oncologic Bronchopleural fistula: the Damocles sword of all pneumonectomies

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Abstract

The postpneumonectomy bronchopleural fistula (BPF) remains a difficult challenge for the thoracic surgeon. We report the case of a very late-onset (60 years) left BPF managed by video-assisted mediastinoscopy discussing the direct consequences of this complication in the postpneumonectomy period.

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1. Introduction

Historically, the postpneumonectomy bronchopleural fistula (BPF) has been challenging the thoracic surgeon. Nowadays, the international literature mentions multiple works of successful management. 'Prevention is the key' was the constant concept. The problem still exists under-lined by excessive mortality (25%-71%)

[1]. We report the case of a very late-onset (60 years) left BPF managed by video-assisted mediastinoscopy (VAM) discussing the direct consequences of this complication in the postpneumonectomy period.

2. Case report

An 80-year-old white female had in her medical history: hypertension, hysterectomy with ovariectomy (1982), cholecystectomy (1996). In 1946 she underwent a left pneumonectomy for bronchial leiomyoma. She was well until the last six months when a persistent cough appeared. Four months later, she began to have moderate fever, nauseous sputum and she lost weight. Spirometry noticed: TLC=2.12 l (46%); RV= 1.21 l (57%); FEV₁=0.76 l (46%); FVC=0.85 l (39%); FEF =0.63 l (29%).

Clinically, at admission, she had 37.8 °C of fever; the biology showed mild inflammatory syndrome (white blood cell=11x10⁹/l, C-reactive protein=107 mg/l, fibrinogen= 6.4 g/l) and anemia (hematocrit=31%, hemoglobin=6.4 g/l). The flexible fiberoptic bronchoscopy noted a left inflammatory stump with a small opening. Bacteriologic samples identified *Pseudomonas aeruginosa*. The chest computed tomography (CT)-scan showed an air-liquid level in the left pleural cavity and a 13-mm long bronchial stump

(Fig. 1). In addition, *Candida albicans* was discovered in urine samples.

We completed a VAM closure of the BPF following a standard technique [2]. At the end of the procedure, a chest drain was put in the left pleural cavity. In the postoperative period, she had adapted antibiotics and active rehabilitation. Daily irrigations were done within the chest tube with povidone-iodine. After three days of relatively stable condition, she became progressively respira-

tory insufficient. Major obstructive bronchial secretion and ineffective cough led to right lower lobe pneumonia. The fatal outcome occurred on the seventh postoperative day.

3. Discussion

BPF remains the most dreaded complication following pneumonectomy. Most commonly in the immediate post-operative period, this complication has a direct relationship with pleural empyema. Early bronchial dehiscence leads to empyema by direct contamination of the pleural space. On the contrary, any contamination of the pleural cavity can lead to BPF. In any case, further aspiration pneumonia with subsequent adult respiratory distress syndrome is the most common cause of death. The situation is different in the late period. After the 90th postoperative day, fibrothorax is formed and the pleural space is filled by small fluid compartments [3]. The patient regained a good muscular capability and effective cough. It is difficult to imagine the formation of the BPF but also how to prevent it. The explanations are beyond the procedure-related or patient related risk factors.

The surveillance of the lung-operated patient is a subject of debate. A balance of specialty cares from the thoracic surgeon, the pneumologist but also the patient's regular physician appears to optimize the specific needs of the patient after lung resection. In our



CT-scan
mm long
stump.

ex-
routine
includes

Fig. 1. Chest
with a 13
bronchial

perience,
follow-up
a five-year

post resectional period, then the general physician looks forward. In present times with increased life expectancy and improved therapeutic strategies, the general physician may be confronted with a patient with lung resection. Pneumonectomy in itself is a disease. The pleural non-collapsible space, filled with brady-trophic tissue after resection, serves as an ideal bed for possible contamination.

Since the first successful pneumonectomy in 1933 [4], the postoperative course was marked by the appearance of pleural empyema (treated by thoracoplasty). Today, in the antibiotic era, infection of the pneumonectomy space is an occasional hazard. Recent articles clearly showed that the

risk of empyema decreases with time, but empyema alone may occur even 20 years after resection [5]. Whenever the diagnosis of empyema is made, prompt drainage is required and a BPF should be searched for. In fact the mechanism of the late BPF is like 'empyema necessitas': fistula is open where the lowest resistance is encountered. Our case is concordant with this idea. Sixty years after pneumonectomy, perhaps a simple bronchitis turns to pleural empyema and BPF. This report is the latest postpneumonectomy BPF ever published.

Several implications can be listed. The patient undergoing pulmonary resection, especially pneumonectomy, is exposed to a complex set of potential complications. Despite the understanding of the risk factors, BPF can appear with a high mortality rate. The risk obliges the general physician to know this issue and to consider the postpneumonectomy patient as a 'fragile' patient. This physician needs to be facile with preventive technique, be prompt in recognition of problems and informed of new and successful treatment strategies.

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