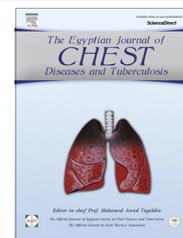




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# Pre and post operative diagnosis of lung cancer patients: Is there a concordance?

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## KEYWORDS

Lung cancer;  
 Pathology;  
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**Abstract** *Background:* The diagnosis of lung cancer is essential to customize the care of patients. Their management is based on histological diagnosis and extent of disease at time of diagnosis.

*Aim of the study:* To study the impact of preoperative and postoperative pathological diagnosis of a group of patients managed for lung cancer.

*Patients and methods:* This study was a single-center retrospective study. The duration of inclusion was 4 years (1 January 2011–31 December 2014). We compared the preoperative pathological outcomes of medical procedures and postoperative histological data. Data values were estimated in percentage.

*Results:* one hundred patients were included in the study. The concordance rate between preoperative and postoperative diagnoses across all histological types, was 68%. The misdiagnosis rate and incomplete diagnosis rates were 10% and 22%. There were discrepancies regardless of diagnostic histologic type. Concordance rates of endoscopy, the trans-bronchial puncture, echo-endoscopy, and CT-puncture were 74%, 77%, 46%, and 66% respectively.

*Conclusion:* Our study shows pre and postoperative discrepancy in nearly 30% of cases. This finding should be taken into account because it can change the therapeutic management of these patients in particular of non-operated patients.

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## Introduction

The management of lung cancer is based on histological diagnosis and extent of disease at diagnosis, determined by the TNM [1] classification. Currently, Lung cancer is the most

common cancer worldwide, accounting for 1.61 million new cases annually representing 12.7% of all new cancers. It is also the most common cause of death from cancer, with 1.38 million deaths (18.2% of the total). The majority of the cases now occur in the developing countries (55%) [2]. Lung cancer is ranked fifth among male population and thirteenth among female population. It affected (73.6%) males and (26.4%) females with a male to female ratio of 279:100 [3]. Three quarters of patients with non-small cell lung cancer are diagnosed with locally advanced (stage IIIB) or metastatic (stage IV),

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unresectable [3]. Chemotherapy for these patients is the primary therapeutic option. The choice of a different protocol of chemotherapy regimens is guided largely by histological typing and immunohistochemical profile of the tumor so the treatment is specific for each cell type: small cell carcinoma, squamous cell carcinoma and adenocarcinoma. During the last decade, researches, including genetic, have enabled the development of targeted therapies. Patients with adenocarcinoma can currently benefit from specific treatments based on tumor mutations. The individualization of these biomarkers has amended decision algorithms therapist. Having a reliable diagnosis has become essential to customize the care of patients. The vast majority of lung cancer diagnoses is obtained from small biopsies performed during non-surgical procedures. The small size of samples and the small amount of tissue obtained from these methods can make it difficult or impossible for the achievement of all pathological examinations. The reliability of the diagnosis can then be questioned.

### Patients and methods

This study was a single-center retrospective study. The duration of inclusion was 4 years (1 January 2011–31 December 2014). In total, 200 patients were followed up in our hospital for lung cancer. 150 had had a surgery for diagnostic or therapeutic purposes at cardiothoracic department Zagazig university hospital. Of these, 100 who had a preoperative diagnosis were included in this study.

The objective of this study was to verify the correlation between the preoperative and postoperative histological diagnosis. A preoperative diagnosis of lung carcinoma formal had to be obtained by medical method (bronchoscopy, Trans-bronchial aspiration (TBNA), Sputum cytology and Computed tomography (CT) C-T guided biopsy). The final diagnosis was obtained only through surgical method (wedge resection, pleural biopsies, segmentectomy, lobectomy, pneumonectomy, lymph node biopsies). Each patient had a complete sheet, including: a physical examination, chest radiography (anteroposterior and lateral), a chest CT, abdominal and brain, and fiber optic Rigid bronchoscopy. The operability sheet included: ECG, pulmonary function tests, a gas analysis, and laboratory tests. Where necessary, more complex explorations complete the assessment: cardiac ultrasound, cardiac and cardiopulmonary effort test, myocardial perfusion and ventilation/perfusion scan. For each patient we studied preoperative histological type, preoperative diagnostic method, postoperative histology, and postoperative diagnostic

**Table 1** Diagnostic methods.

Method of diagnosis	No. of examination	No. of diagnosis obtained	Percentage (%)
Fiber optic bronchoscopes	101	61	60.3
TBNA	18	14	78
Sputum cytology	8	6	75
C-T guided biopsy	19	19	100
	146 patients	100 patients	

method. We excluded patients with preoperative diagnosis other than lung cancer and patients with no preoperative diagnosis. According to this we divide the patients into: Group 1-concordant diagnosis: pre and postoperative histology is identical. Group 2-misdiagnosis: unconfirmed final diagnosis of cancer or different pre- and postoperative histological types. Group 3-incomplete diagnosis: a final diagnosis of tumor is of composite histology or undifferentiated tumor, to be specified by surgery. The results of the matches were expressed as a percentage.

### Results

**Table 1:** Diagnostic methods. One hundred patients were included in the study. The average age was 62 years. 75 were male (75%) and 25 were women (25%). Preoperative diagnoses were obtained by 61 fiber optic bronchoscopes, 14 TBNA, 6 sputum cytology, 19 Computed tomography (CT) guided biopsy.

**Table 2:** Surgical techniques used for diagnosis. Postoperative diagnoses were obtained by lobectomy in 56 patients (56%), pneumonectomy 17, 1 pleuropneumectomy total of 18 patients (18%), 8 segmentectomy and atypical resections (8%), 4 pleural biopsy (4%), 14 video mediastinoscopy and mediastinal exploration (14%).

**Table 3** Group of patients and concordance. Patients were classified into 3 groups: (concordant Group 1): The preoperative histology is corresponding to the definitive diagnosis in 68 patients (68%). (Group 2): The preoperative misdiagnosis is presented in ten patients (10%). (Group 3): The preoperative diagnosis was incomplete in 22 patients (22%).

**Table 4** and **Fig. 1** Pre-and post-operative diagnostic pathology. The preoperative histology is corresponding to the definitive diagnosis (concordant Group 1) in 68 patients (68%): 29 patients adenocarcinoma (42.6%); 30 patients squamous cell carcinomas (44.1%); 4 carcinoid tumors (2 typical and 2 atypical) (6%); 2 small cell carcinomas (SCC) (2.9%); 2 non-small cell carcinomas (NSCC) (2.9%) and 1 case of sar-

**Table 2** Surgical techniques used for diagnosis.

Surgical techniques	No. of patients	Percentage (%)
Lobectomy	56	56
Pneumonectomy	17	18
Pleuropneumectomy	1	
Segmentectomy and atypical resection	8	8
Mediastinoscopy and mediastinal exploration	14	14

**Table 3** Group of patients and concordance.

Group 1-concordant diagnosis	Group 2-misdiagnosis	Group 3-incomplete diagnosis
68	10	22
68%	10%	22%

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