# Histologic Types, Staging, Resectability, and Smoking among Thai Patients with Lung Cancer

PRATHEEP RIANTAWAN, M.D., M.Sc., M.R.CP.(UK)*, SUTARAT TUNGSAGUNWATTANA, M.D.**, PONGLADA SUBHANNACHART, M.D.**, CHAIWUD YODTASURODOM, M.D.***

**Abstract**

Aim : To examine the prevalence of cigarette smoking, histological types, staging at presentation and resectability among Thai patients with lung cancer.

Setting : A 500-bed referral cardiothoracic centre.

Method : Prospective study with pre-defined outcome data, from January to December 1996.

Results : A total of 349 patients were histologically proved to have lung cancer. The mean age was 60 years (SD 12.5). There were 264 males and 85 females. 269 patients (77%) were smokers. Percentage of histopathologic types were : 39 per cent adenocarcinoma, 30 per cent squamous cell carcinoma, 20 per cent undifferentiated cell carcinoma, and 11 per cent small cell carcinoma. The association with smoking is stronger in squamous cell carcinoma and small cell carcinoma and weaker in adenocarcinoma. Most patients (82%) were in advanced stages, stage 3B and 4. 18 per cent of the patients were in stages eligible for surgery, i.e. stage 1, 2 and 3A. However, only 9.7 per cent of the patients were operable and 9.1 per cent were resectable.

Conclusions : On reaching the diagnosis, most patients with lung cancer were in advanced stages of the disease, rendering a low resectability. The results emphasise the need for early diagnostic intervention in patients presenting with lung mass. Furthermore, preventive measures including a campaign against cigarette smoking, research into other possible aetiological factors should be more encouraged.

**Key word :** Lung' Cancer, Thai Patient, Histology, Staging, Resectability, Smoking

Lung cancer is common and notoriously difficult to treat. It poses a major health problem worldwide. Three-fourths of patients with lung cancer are unresectable at presentation because the disease is either metastatic or locally advanced[1,2]. Although the demographic data, cigarette smoking rate, histologic types, staging at presentation, and resectability have been described, these data origi-

* Division of Medicine,
** Division of Radiology,
*** Division of Surgery, Central Chest Hospital, Nonthaburi 11000, Thailand.

nated wholly from developed countries, mainly North America and Europe[1-5].

The above-mentioned aspects are clearly modulated by environmental and socio-economic factors. They are conceivably different between developed and developing countries. Furthermore, resectability rates may depend on the ease of access to a referral centre, which in turn reflects the strength of the health care system. Keeping these in perspective, only the data and analysis on lung cancer among Thai patients would accurately gauge the severity of the problems related to lung cancer in the country.

Therefore, the present study prospectively examines Thai patients with lung cancer presenting to a referral centre with regards to demographic data, cigarette consumption, histopathologic types, staging at presentation, and resectability.

## MATERIAL AND METHOD

The study was conducted at the Central Chest Hospital, Nonthaburi, Thailand. This 500-bed, cardiothoracic centre provides referral services for cardio-respiratory diseases for patients from all parts of the country. It is staffed with medical, radiological, surgical, and pathological divisions, and is fully equipped with diagnostic facilities including fibreoptic bronchoscopy, and computed tomography.

### Patients and method

From January to December 1996, patients with a suspected lung mass were registered into this study. Patients care, diagnostic process, and treatment plan were conducted in the usual manner. Diagnostic procedures comprised fibreoptic bronchoscopy, percutaneous needle aspiration/ biopsy, pleural aspiration/ biopsy, and lymph node biopsy, as clinically dictated.

Computed tomography was performed in cases with a proximal tumor, or cases presenting with signs of metastases. Computed tomography of the chest was also undertaken in all cases with hilar/ mediastinal shadow on chest radiograph as part of staging. It typically takes no longer than two weeks for a patient with suspected lung tumor to reach a histologic diagnosis in our hospital. Patients who were finally proved not to have lung cancer were excluded from the analysis.

For each patient, age, gender, and smoking history were recorded. For the purposes of this study, non-smokers were defined as never-smokers or those who had ever smoked < 0.1 pack-year, whereas, smokers meant current smokers or ex-smokers of ≥ 0.1 pack-year.

Histopathologic types, staging, and resectability were collated. Staging was defined according to the new international TNM classification proposed by Mountain CF[6]. Assessment of operability was made in a standard fashion, based on physical evaluation, bronchoscopic findings and pulmonary function testing[7,8]. Operability and resectability were assessed only in patients with non-small cell lung cancer, as patients with small cell type were treated with chemotherapy or radiotherapy.

### Statistical method

Data are presented as percentages, ratio, or means (SD) as appropriate. Student's *t*-test was used to assess the differences between groups for continuous data and Chi squared test for categorical variables[9]. Statistical significance was assessed at 5 per cent level. All data analyses were performed using a standard statistical programme.

## RESULTS

### Demographic data

From January to December 1996, a total of 349 patients were proved to have lung cancer. There were 264 males and 85 females (3.1 : 1). The mean age was 60 years (SD 12.5, range 15-86 yrs) (Fig. 1). The mean age in males was significantly higher than in females (62.5 *vs* 57.2 yrs, $p < 0.005$).

### Cigarette consumption

There were 269 smokers (77%) and 80 non-smokers (23%). The proportion of smokers was significantly higher in males than in females (251 : 13 *vs* 19 : 66, respectively, $p < 0.001$).

### Histopathologic types

Of the total 349 cases, 40 cases were of small cell lung cancer (SCLC), whereas, 309 cases were non-small cell lung cancer (NSCLC). Among the 309 NSCLC, the histologic subtypes were as follows : 123 adenoCAs (including 16 bronchioloalveolar cell types), 94 squamous cell CAs, 64 undifferentiated cell CAs, 2 large cell CAs, 1 adenosquamous cell CA, and 1 combined small cell-squamous cell CA; however, the remaining 38 cases were histologically reported as non-small cell types.

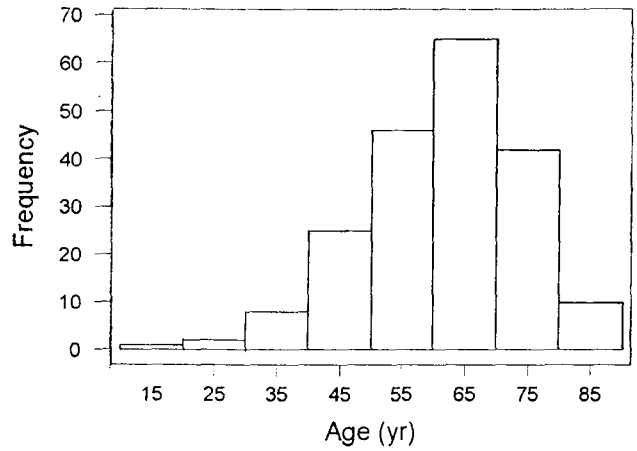


**Fig. 1. Histogram showing age group of 349 patients with lung cancer.**

Considering only the 311 cases with definitive histologic subtypes, the percentages of various subtypes were as follows : 39 per cent adenoCA (including 5% bronchioloalveolar cell CA), 30 per cent squamous cell CA, 20 per cent undifferentiated cell CA, and 11 per cent small cell CA (Table 1).

**Table 1. Percentage of histologic types and ratio of smokers : non-smokers.**

| Histologic types | % | Smokers : Non-smokers |
|---|---|---|
| AdenoCA | 39 | 0.9 : 1 |
| Squamous cell CA | 30 | 22.5 : 1 |
| Undifferentiated cell | 20 | 4.3 : 1 |
| Small cell CA | 11 | 12.3 : 1 |

### Histopathologic types and relation with cigarette smoking

The numbers of smokers : non-smokers were 90 : 4 in squamous cell CA group, 58 : 65 in adenoCA group, and 37 : 3 in small cell CA group. Thus, the linkage between lung cancer and cigarettes appears strongest in squamous cell CA and small cell CA, and weaker in undifferentiated cell CA. On the contrary, the association is less apparent in adenoCA (Table 1).

### Staging, operability and resectability

Clinical staging at diagnosis, operability and resectability are shown in Fig. 2. Most patients (82%) presented in advanced stages, comprising 185 patients (60%) in stage 3B, and 67 patients (22%) in stage 4. There were 14 patients (4%) in stage 1, 22 patients (7%) in stage 2, and 23 patients (7%) in stage 3A. Therefore, only 18 per cent were in stages eligible for surgery, i.e. stage 1, 2, and 3A.

Among the 59 patients in stage 1, 2, and 3A, 6 patients declined surgery and 5 patients opted to self-refer to other hospitals, 11 patients had insufficient lung function, 4 patients had serious co-morbidity, and another 4 patients were in extreme age. The remaining 29 patients underwent thoracotomy. Unfortunately, resection proved impossible in 2 patients in view of extensive lesions and encroachment to mediastinal structures.

Excluding the 11 patients who declined surgery or self-refer, the operability rate was 29/298 = 9.7%, and the resectability rate was 27/298 = 9.1% (Fig. 2).

## DISCUSSION

The present study has systematically evaluated Thai patients with lung cancer in a number of important issues. The main finding that most patients with lung cancer are in inoperable stage at diagnosis is no surprise. However, several points merit discussion.

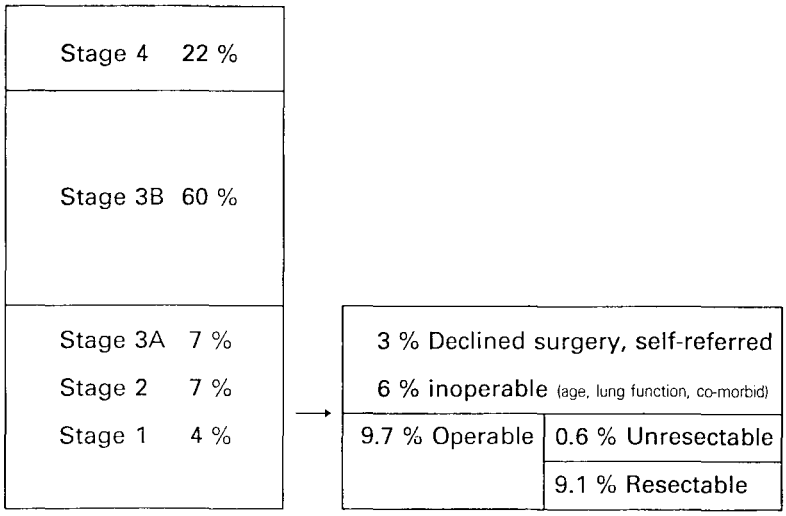


**Fig. 2. Percentage of staging, operability, and resectability of 309 patients with non-small cell lung cancer.**

It must be mentioned that the data presented herein arose from a tertiary, referral centre. This unavoidably is associated with a number of natural bias. Patients presented to a referral centre are potentially those with more severe, more advanced, or more problematic diseases. Furthermore, it typically takes a number of weeks, or months in some instances, for investigations of negative results at local health areas prior to the actual referral step. This delay clearly poses a significant impact on the overall stage at final diagnosis.

The resectability rate of 9.1 per cent is appalling. This is significantly lower than the figure quoted in the literature, typically about 20 per cent[11]. The main reason for the low resectability among our patients population clearly lies in the late presentation, as indicated by a high per centage of patients with stage 3B and stage 4, 82 per cent. In a number of patients, the late presentation appears to be attributed to delay in referral, rendering diagnostic intervention unduly delayed.

Although lung cancer is typically a disease of the middle-aged and elderly, the young are no exemption. It is worrying that a few patients in the present study were aged less than 35 years, some even in the twenties.

It is beyond the scope of the present study to elucidate all the aetiological factors causing lung cancer. Nonetheless, the high prevalence of cigarette smoking in our patients population, 77 per cent, accords with reports elsewhere[12]. Furthermore, we have shown the stronger link between smoking and squamous cell and small cell types and weaker association with adenocarcinoma. Other possible causal factors, not addressed in this study, include nutritional factor, air pollution and passive smoking[13,14].

It is noteworthy that adenocarcinoma is the most common cell type in our study. It has been shown that adenocarcinoma of the lung is increasing and, in some reports, represents the most common histologic type[15,16]. Considering the weak association between smoking and adenocarcinoma, other aetiological factors seem responsible.

Given that only a small number of patients with lung cancer are resectable and the prognosis among those with unresectable tumour is indeed poor, two important strategies are imperative in our country :

Firstly, prevention steps must be exercised and include a continued campaign against cigarette smoking, measures to protect passive smokers. Research into other aetiological factors should be encouraged in order that prevention of risk factors and modification of lifestyles be undertaken.

Secondly, diagnostic intervention in patients presenting with lung mass should be expedited and, when necessary, referral should be made as early as possible.

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# การศึกษาการสูบบุหรี่, ชนิดเซลล์มะเร็ง, ระยะของโรค, และการผ่าตัดก้อนเนื้องอกได้ในผู้ป่วยไทยด้วยโรคมะเร็งปอด


*ประทีป เหรียญตะวัน, พ.บ., M.Sc., M.R.C.P.(UK), อ.ว.*, สุฑารัตน์ ตั้งสกุลวัฒนา, พ.บ., ว.ว.**, พงษ์ลดา สุพรรณชาติ, พ.บ., ว.ว.**, ชัยวุฒิ ยศถาสุโรดม, พ.บ., ว.ว.****



ได้ศึกษาอัตราการสูบบุหรี่, ชนิดเซลล์มะเร็ง, ระยะของโรค, และการผ่าตัดก้อนเนื้องอกได้ ในผู้ป่วยไทยด้วยโรคมะเร็งปอดที่มารับการรักษา ณ โรงพยาบาลโรคทรวงอก ระหว่างเดือน มกราคม – ธันวาคม พ.ศ. 2539. มีผู้ป่วยทั้งสิ้น 349 รายได้รับการวินิจฉัยเป็นมะเร็งปอด. อายุเฉลี่ย 60 ปี, เป็นชาย 264 ราย, หญิง 85 ราย. ผู้ป่วย 269 ราย (ร้อยละ 77) สูบบุหรี่. ชนิดเซลล์เป็น adenocarcinoma ร้อยละ 39, squamous cell carcinoma ร้อยละ 30, undifferentiated cell carcinoma ร้อยละ 20, small cell carcinoma ร้อยละ 11. พบว่ามะเร็งชนิด squamous cell carcinoma และ small cell carcinoma มีความสัมพันธ์กับการสูบบุหรี่มากที่สุด. ผู้ป่วยส่วนใหญ่จัดอยู่ในระยะท้ายของโรคคือ stage 3B ร้อยละ 60, และ stage 4 ร้อยละ 22. มีผู้ป่วยเพียงร้อยละ 9.1 เท่านั้นที่ได้รับการผ่าตัดก้อนมะเร็งได้ในที่สุด.



**คำสำคัญ** : มะเร็งปอด, ผู้ป่วยไทย, ชนิดเซลล์, ระยะของโรค, การผ่าตัดก้อนเนื้องอกได้, การสูบบุหรี่



* ฝ่ายวิชาการ,

** กลุ่มงานรังสีวิทยา,

*** กลุ่มงานศัลยกรรม, โรงพยาบาลโรคทรวงอก, กรมควบคุมโรคติดต่อ, นนทบุรี 11000