

Factors associated with the complications after early stage lung cancer: a pilot study

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Introduction

Patients with early stage lung cancer including stage I, II, and IIIA consider lung surgery as a treatment. Patients usually discharge after surgery without any complications, however, postoperative pulmonary complications, such as pneumonia, atelectasis, worsened gas exchange, bronchoconstriction, thromboembolic disease, and respiratory failure, sometimes occur and they lead to admission of intensive care unit (ICU) and increased length of hospital stay. The purpose of this study is to investigate factors associated with the complications after lung surgery in the patients with early stage lung cancer

Method

We reviewed medical record of patients with lung cancer of stage I who received operation in our hospital from March to June 2018. General characteristics including age, sex, hypertension, diabetes mellitus, preoperative pulmonary function, smoking history, type of cancer and operation were reviewed. Furthermore, postoperative consult for increased secretion, duration of operation to discharge, length of hospital stay, event of pneumothorax, admission of ICU, and usage of mechanical ventilation were also reviewed. The factors influencing the length of hospital stay was investigated using multivariate linear regression analysis, stepwise Method.

Result

Twenty eight patients with lung cancer of stage I were enrolled, and characteristics of them are shown in Table 1. The mean age was 64.4 ± 8.6 years, and 10 (36%) patients had abnormal pulmonary function test. There were 5 current smokers, 9 ex-smokers, 14 non-smokers. All of the cancer was primary lung cancer. 18 (64%) patients received lobectomy, and 8 (28%) patients received segmentectomy. After surgery, 20 (71%) patients were admitted to the ICU, however, there were no patients who needed mechanical ventilation or postoperative consult for increased secretion. Mean length of hospital stay was 10.5 ± 6.4 days. The Result of pulmonary function test ($B=-2.03$, $p=0.00$) and type of operation ($B=-2.50$, $p=0.02$) were shown to influence the length of hospital stay.

Conclusion

Although this study has many limitation, the length of hospital stay was affected by the Result of pulmonary function test and type of operation in the patients with early stage lung cancer. These factors should be considered when deciding the need of preoperative

pulmonary rehabilitation to reduce complications of the lung surgery. Further study is needed to generalize the Result.

Table 1. Characteristics of patients with lung cancer of stage I undergoing surgery

Number of patients		28	
Age (years)		64.4 ± 8.6	
Sex (male : female)		11 (39) : 17 (61)	
HTN		15 (54)	
DM		4 (14)	
PFT	FVC (%)	92.8 ± 13.6	
	FEV1 (%)	89.6 ± 19.5	
	Result	Normal	18 (64)
		Obstructive	6 (22)
		Restrictive	2 (7)
Mixed		2 (7)	
Smoking	Current smoker	5 (18)	
	Ex-smoker	9 (32)	
	Non-smoker	14 (50)	
Cancer	Primary : Metastatic	28 (100) : 0 (0)	
	Right : Left	20 (71) : 8 (29)	
Type of surgery	Lobectomy	18 (64)	
	Segmentectomy	8 (28)	
	Wedge resection	1 (4)	
	Others	1 (4)	
Postoperative consult for increased secretion		0 (0)	
Length of hospital stay (day)		10.5 ± 6.4	
Event of pneumothorax		3 (11)	
ICU admission		20 (71)	
Mechanical ventilation		0 (0)	

Values are presented as mean ± standard deviation or number (%).

HTN: hypertension; DM: diabetes mellitus; PFT: pulmonary function test; FVC: maximal inspiratory pressure; FEV1: forced expiratory volume in one second; ICU: intensive care unit;

Table 2. Independent factors affecting the Length of hospital stay

	B	p value	R²
Result of PFT	-2.03	0.00*	0.735
Type of operation	-2.50	0.02*	

Data analyzed with multivariate linear regression analysis, stepwise method.

PFT: pulmonary function test;

* p<0.05