

Surgery for Stage I Lung Cancer

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ABSTRACT : The surgical outcome for 209 early lung cancers was clinically evaluated.

- 1) Most (93%) of Stage I cancers were composed of pT₁N₀ and pT₂N₀ while 6.3% was pT₁N₀.
- 2) Even in early cancer, nodal involvement and distant metastasis occurred and these related closely to their prognoses.
- 3) Reoperation should be indicated for recurrence with a 10 month or more time interval from the first operation and should be recommended, if possible.

Advances in diagnostic technique for lung cancer have been achieved. As a consequence, early lung cancer has become clinically detected and the surgical curability has been improved with time. This study was undertaken to evaluate surgical treatment for stage I lung cancer patients.

PATIENTS

During the past five years, 209 Stage I lung cancer patients (40.1%) were surgically operated upon among a total of 521 lung cancer patients at the same period of time at the First Department of Surgery, Nagasaki University School of Medicine. It is a reflection of increasing stage I lung cancer patients.

According to histologic findings (Table 1), adenocarcinoma included 96 cases (46.0%), squamous cell carcinoma 81 (38.8%), large cell carcinoma 13 cases (6.2%) and small cell carcinoma six cases (2.8%) respectively. According to p-TNM classification, pT₂N₀M₀

was 106 cases (50.7%), pT₁N₀M₀ 90 (43.0%), pT₁N₀M₀ 13 (6.3%) respectively. It is indicated that stage I lung cancer is mostly composed of no-nodal involvement. In view of the operative method, limited operation was applied to 25 cases, 22 of whom underwent segmentectomy and the remainder three received partial resection. On the contrary, bilobectomy or pneumonectomy were used for 25 cases (11.9%).

Deaths in the hospital were encountered in four cases (1.9%) and postoperative deaths by other diseases were in 19 cases (9.0%). It meant that postoperative death was associated with not only cancer recurrence but also other diseases.

Survival rate of stage I lung cancer patients

Table 1. Stage and histological type in primary lung cancer

	stage I (%)	stage II	stage III	stage IV	total
sq.c.c	81(38.8)	21	91	13	206
ad.c.	96(46.0)	17	90	19	222
large	13(6.2)	5	19	4	41
small	6(2.8)	4	13	1	24
others	13(6.2)	1	14	0	28
total	209(100.0)	48	227	37	521

following surgery is satisfactory as compared with those of other stages of lung cancer. In particular, it was the best in the survival late of more than two years. When compared between Ia and Ib stages which is classified by Japan lung cancer society, the survival rate in Ia of more than two years is more satisfactory than that in Ib. It is suggestive that nodal involvement is a most contributable factor to surgical outcome regardless of the size of the tumor. Even if the tumor size would be very small, when the nodes be involved, recurrence would not infrequently occur within two years following surgery.

Postoperative recurrences in this series were seen in the lung, the bone and the brain including the intestinal tract (Fig. 1). It implied that blood-borne metastasis was much more common than local recurrence to the mediastinum.

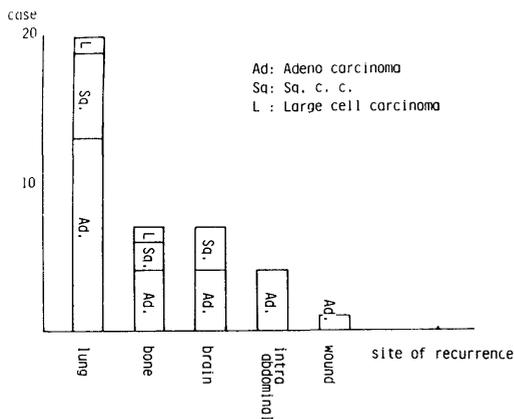


Fig. 1. Sites of recurrence in stage I lung cancer

Wound metastasis is seen in the case with intestinal metastasis, which might be caused by dissemination during the laparotomy procedure.

Postoperative early death was encountered in 11 cases. Three who underwent bronchoplasty were included. However, it was not clear as to whether recurrence was associated with the surgical technique or not. The recurrent locations were on the right in five and on the left in seven. One of them existed on the both sides. According to histologic findings, all cases showed the same histologic pattern without vascular invasion to the lymph vessels.

The possibility of metastatic invasion was suggested and it was compatible with the evidence of the multiple cancers.

Of interest is the fact that all were no patients. It implies that even early stage lung cancer is prone to occur distant metastasis.

Reoperation for recurrence was made in 13 cases. Surgery was performed in 10 cases of the lung and each one of the small intestine, the brain and the adrenal gland (Fig. 2).

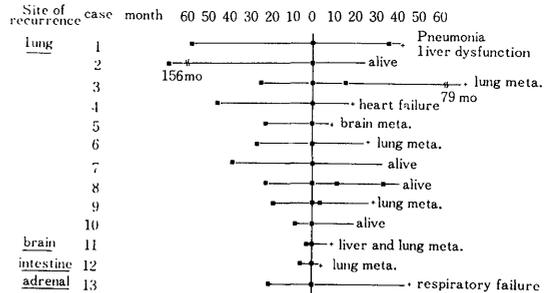


Fig. 2. Prognosis and Interval between first operation and reoperation for metastasis

Those who underwent reoperation have survived more than 40 months, indicating the surgical benefit. Surgery for recurrence is beneficial in making the survival period prolonged. Reoperation was carried out for adenocarcinoma in all but one of squamous cell carcinoma. According to histologic differentiation, there was no close relationship between histologic differentiation and survival period, that is, six were well, two moderate, three poorly and two alveolar cell types respectively.

Of deaths following reoperation, five had

pulmonary metastases of whom one had concomitant hepatic and brain metastasis. Pneumonitis and cardiac failure were seen in one, but not in other surviving four patients. The shorter the time interval from the first to the second operations, the poorer the surgical outcome were.

It appeared that the prognosis of reoperation for the patients who had a 20 month course after the first operation was very satisfactory, if brain metastasis is absent.

DISCUSSION

It is generally accepted that criteria of early lung cancer are divided into the hilar and the peripheral types of lung cancers. In the peripheral types of lung cancers. In the peripheral type of lung cancer, however, conclusion is not drawn by a consensus of researchers as to whether the diameter of the tumor mass is less than 2cm or 1.5cm.

On the contrary, it is not clinically practical if the criterion should be determined to be less than 1cm of the tumor diameter. It is difficult for the clinical use, and is not applicable.

Clinically early stage of lung cancer includes pT₁N₀, pT₁N₁, pT₂N₀ according to TNM classification. Most of early cancer patients in this series comprised pT₁N₀ and pT₂N₀. The patients who had a stage of T₁N₁ were as many as 6%. According to histologic findings, adenocarcinoma predominated in the early lung cancer. It is a reflection that adenocarcinoma may well be easily detected on chest x-ray films as the peripheral type. On the contrary, squamous cell carcinoma was shown in 38.8%. Recently carcinoma limited to the mucosal layer can be diagnosed by cytology and bronchoscopy,^{1) 2)} and clinical patterns have also become apparent.^{2) 3) 4)} Concern has been raised regarding early detection and treatment of lung cancer. It is generally believed that it takes a long period with an average of 6.2 years to develop from early cancer to infiltrative one.⁵⁾

Koss⁶⁾ reported that a period of four to six years is needed for the cancer tumor to develop from occult cancer lesion to clinically detectable tumor mass. Since it has a tendency toward multicentric development of the tumors

in their growing course.⁷⁾ it is emphasized that accurate examination is required for detecting other lesions and it should be determined as to whether it is metastatic or second tumor. It is reported that the second tumor develops in frequency of as many as 3.8 to 7.6%.^{8) 9)} Criteria of judging a second tumor are not certain. One criterion is that the time interval from the first to the second tumors should be 30 to 36 months.¹⁰⁾ another is that each tumor should be separated.⁹⁾

The prognosis for early lung cancer depends on the positive nodal involvement rather than the histologic type or the tumor size.

Even in T₁ tumor, surgical outcome is affected by the presence of nodal involvement and distant metastasis. Therefore, multidisciplinary therapy is necessary in preventing distant metastasis even in early lung cancer, and potent chemotherapy, sensitive to the tumor by the sensitivity test of the anticancer drugs, should be prescribed.

Furthermore, reoperation for recurrent cancer should be indicated for the patients with a 10 month or longer period interval from the first operation to recurrence.¹¹⁾

As to the second tumor, there are many reports which are indicating satisfactory or worse prognoses. It is evident that the prognosis for the second tumor is attributable to the disease stages including nodal involvement and distant metastasis. The prognoses for brain and intestine metastases were very poor, and surgery was palliative to alleviate the increased intracranial pressure and obstruction of the digestive tract. The surgical outcome for pulmonary and adrenal metastases could be fair in saving life. Therefore, if feasible in any time, surgery for organ metastasis is recommended.

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