

Resectional surgery in the treatment of primary carcinoma of the lung with mediastinal lymph node metastases¹

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ABSTRACT Between 1966 and 1970 we reviewed 46 consecutive patients undergoing resection for primary carcinoma of the lung, in whom mediastinal lymph node metastases were found at operation. There was one operative death. Five of the remaining 45 patients survived five years—one of 10 cases of large cell carcinoma, one of 19 cases of adenocarcinoma, and three of 12 cases of epidermoid carcinoma. We believe that mediastinal lymph node metastases are not per se a contraindication to resection of epidermoid carcinoma of the lung.

There is disagreement concerning the role of pulmonary resection in patients with primary carcinoma of the lung found to have mediastinal lymph node metastases. Many surgeons consider such nodal involvement an absolute contraindication to surgery, since it is associated with a five-year survival rate of less than 10% in all histological cell types affected (Bergh and Scherstén, 1965; Sarin and Nohl-Oser, 1969; Fosburgh *et al.*, 1974; Shields *et al.*, 1975; Paulson and Reisch, 1976; Vincent *et al.*, 1976). These authors recommend radiotherapy for such patients since long-term survival for the two modes of treatment is comparable (Sarin and Nohl-Oser, 1969; Paulson and Urschel, 1971). Other surgeons still offer surgical treatment to patients with epidermoid carcinoma of the lung and mediastinal lymph node metastases since they have observed a five-year survival rate of 20–30% in such cases (Pearson *et al.*, 1972; Kirsch *et al.*, 1976; Naruke *et al.*, 1976). We have made retrospective analysis of patients presenting with primary carcinoma of the lung and mediastinal lymph node metastases who underwent resection.

Materials and methods

During the five-year period from 1 January 1966

to 31 December 1970 213 patients underwent thoracotomy for suspected primary carcinoma of the lung at the Chaim Sheba Medical Center. Of these, 11 were proved histologically to have non-carcinomatous lesions and were excluded from the survey. Of the 202 remaining patients, proved by histological study of biopsy, or resected specimen, or both, to have primary carcinoma of the lung, 169 (83.7%) underwent pulmonary resection.

Mediastinal lymph node metastases were found in 46 resected patients (27.2%) who form the basis for our report.

The Chaim Sheba Medical Center is the referral hospital for the central part of Israel, and most of the assessment and selection for surgery had been made elsewhere. None of these patients underwent mediastinoscopy or anterior mediastinotomy, or both, before the operation. Adjuvant radiotherapy was not given. Lobectomy, with removal of all adjoining and suspicious lymph nodes, was the operation of choice whenever technically feasible; pneumonectomy was reserved for lesions that could not be removed by a lesser procedure. All surgically excised specimens had been examined for the presence and location of mediastinal lymph nodes affected by cancer. In this study mediastinal lymph nodes were classified as simply being affected or unaffected, since more exact data on their anatomical location in the mediastinum were inconsistent or incomplete in many operation and pathological reports.

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²This work is part of Dr Rubinstein's MD thesis.

Similarly, attempts to determine retrospectively the presence or absence of perinodal invasion in the affected mediastinal lymph nodes were unsuccessful because of the extensive replacement of the lymph nodes by tumour. Each specimen was examined histologically and classified according to the World Health Organisation classification (Kreyberg, 1967). The original histological preparations of all 46 cases were retrieved, re-examined, and reclassified by one author (IR) in collaboration with a senior pathologist, again according to the World Health Organisation classification, without prior knowledge of the original histological classification.

Operative mortality was defined as death occurring within 30 days of resection, and these cases were excluded from the survival analysis.

Follow-up data on all patients were obtained for at least five years after resection, or until the time of death.

Results

The results of our study are presented in the table. There were 34 men and 12 women. The median age at the time of operation was 60.0 years for men (age range 33–72) and 60.5 years for women (age range 49–73). Adenocarcinoma was diagnosed in 43.5% (20/46) of these cases, epidermoid carcinoma in 26.1% (12/46), and large cell carcinoma in 21.7% (10/46). Small cell anaplastic carcinoma was diagnosed in three cases (6.5%). One case of primary carcinoma of the lung could not be classified.

Thirty patients with mediastinal lymph node metastases underwent pneumonectomy (65.2%) and fourteen (30.4%) underwent lobectomy. One patient had a bilobectomy and another patient had a lobectomy and lingulectomy. The frequency of pneumonectomy was similar in the three most common histological cell types in this series. Only one patient of the total 46 died within 30 days of the operation; this was a man with adenocarcinoma who underwent a pneumonectomy.

Five patients out of the remaining 45 survived five years or more after successful resection of the tumour: 3 of 33 men and 2 of 12 women. Five-year survival rate after lobectomy (3/14) appeared to be better than that after pneumonectomy (2/29). The number of five-year survivors in the entire series, and in each histological cell type, was too small for statistical analysis. Mediastinal lymph node involvement in adenocarcinoma and in large cell carcinoma was associated with a grim outlook: 1/19 and 1/10 survivors respectively. On the other hand, a five-year survival rate of three out of 12 cases was achieved in patients with epidermoid carcinoma and mediastinal lymph node metastases in this series.

Discussion

The present series is based on a small number of cases and is subject to selection and detection biases. The preponderance of adenocarcinoma among the patients in our series may well be explained by this selection bias, although the propensity of adenocarcinoma to metastasise early to intrathoracic lymph nodes is well known (Weiss *et al*, 1970). In addition, other authors (Herman and Enterline, 1970; Horowitz and Enterline, 1970) have found that the prevalence of adenocarcinoma among Jewish groups is higher than among a mixed population. Nevertheless, this study confirms the poor prognosis associated with mediastinal lymph node involvement after resection of primary carcinoma of the lung, particularly in adenocarcinoma and in large cell carcinoma. Despite the small number of cases, the relatively favourable prognosis of epidermoid carcinoma with mediastinal lymph node metastases in this series is similar to the results reported by Pearson *et al* (1972), Kirsh *et al* (1976), and Naruke *et al* (1976), even though the composition of case material, the histological classification, and the methods of data analysis in these studies were different.

From our results, we consider patients with

Table Resected primary carcinoma of the lung with mediastinal lymph node metastases: 1966–70

	Total cases	Epidermoid ca	Small cell anaplastic ca	Adeno ca	Large cell ca	Unclassified
Total tumour	46	12	3	20	10	1
Type of resection						
Pneumonectomy	30	8	1	14	6	1
Lobectomy	14	3	2	5	4	
Bilobectomy	1			1		
Other	1	1				
Operative mortality	1			1		
Five-year survival	5	3		1	1	

epidermoid carcinoma of the lung and mediastinal lymph node metastases as candidates for surgical treatment, whereas we do not feel that surgery is the primary treatment of choice in patients with adenocarcinoma and large cell carcinoma of the lung, when mediastinal lymph node metastases are present.

The influence on prognosis of the exact anatomical location of affected lymph nodes in the mediastinum (Pearson *et al*, 1972; Fosburg *et al*, 1974; Naruke *et al*, 1976) and the place of adjuvant preoperative or postoperative radiotherapy for positive mediastinal lymph nodes (Pearson *et al*, 1972; Kirsh *et al*, 1976) remain to be determined.

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