

# A multidisciplinary approach to the treatment of small-cell lung cancer: the role played by surgery

G. SPORTELLI, L. LOFFREDO\*, M. LUPI\*, M.T. LONARDO, V. PRECE\*, M. LAZZARO, S. GALLINA, B. MANCINI, L. MUGNAINI\*\*, L. MUGNAINI\*\*

II Department of Surgery, "La Sapienza" University - Rome (Italy)

\*IV Department of Surgery, "La Sapienza" University - Rome (Italy)

\*\*II Department of Respiratory Pathology and Allergology, "C. Forlanini" Hospital - Rome (Italy)

**Abstract.** – The authors report their data on 344 cases of small-cell lung cancer treated according to indications with combined chemo-radiotherapy and in selected cases with surgical intervention.

In patients with limited disease, the results of pharmacologic therapy significantly improve the prognosis only in association with surgery. The role of surgery has been reappraised in the treatment of small-cell lung cancer which appears, nowadays, multidisciplinary.

Key Words:

Small-cell lung cancer, Surgical treatment.

## Introduction

Surgical therapy for small-cell lung cancer has been over past years a discussed issue, passing from a phase of enthusiasm and interest to a period, during the 60s, of unjustified abstention. A reason for this was represented by the studies made by British Medical Research which comparing the use of chemotherapy alone with the association of surgery and adjuvant chemotherapy observed a non significant impact on prognosis<sup>1</sup>. However, to assess surgical management of small-cell carcinoma, the veterans administration surgical oncology group evaluated 132 patients who had potentially "curative" resections and showed that resection was definitely indicated in patients with T<sub>1</sub>N<sub>0</sub>M<sub>0</sub> and T<sub>2</sub>N<sub>0</sub>M<sub>0</sub> lesions<sup>2</sup>. Nowadays the approach to small-cell lung cancer is multidisciplinary.

## Materials and Methods

Between 1983 and 1997, 344 patients affected by small-cell lung cancer were treated in the II Department of Respiratory Pathology and Allergology, "C. Forlanini" – Rome.

These patients were studied following the system proposed by VALG (Veterans Administration Lung Cancer Study Group), which identifies two stages in the illness: the "limited", including, whatever the cytological characteristics might be, every endothoracic location, with or without mediastinic or supraclavicular metastasis or homolateral pleural effusion, and the "extended", including every stage beyond the definition of "limited" illness.

Of the 344 patients observed, 182 were affected by limited disease, and 162 by extended disease.

Surgical treatment was applied in 20 of the 182 patients with limited disease and was followed by chemotherapy or combined chemo and radiotherapy in 16 and 4 cases respectively.

One hundred and eleven patients received chemotherapy alone and 51 combined chemo and radiotherapy.

Of the 162 patients with extended disease, 126 received chemotherapy alone and 34 combined chemo and radiotherapy, 2 patients underwent surgery and adjuvant chemotherapy. The two patients who underwent surgery were operated because of a large masses which caused tracheal compression and gravative pain resistant to anthalgic therapy, due to compression of mediastinal nervous structures.

Table I. Limited disease.

N° patients	Type of treatment	Mean survival time (months)
111	Chemotherapy	8.8
51	Chemotherapy + radiotherapy	13.4
16	Surgery + chemotherapy	31.4
4	Surgery + chemotherapy + radiotherapy	20.0

## Results

The mean survival time of patients with limited disease (Table I) who underwent surgery and adjuvant chemo (16 cases) or chemo and radiotherapy (4 cases) was 31.4 and 20 months respectively<sup>3</sup>. In the remaining patients with limited disease who were treated with chemotherapy alone (111 cases) or combined chemo and radiotherapy (51 cases), mean survival time was 8.8 and 13.4 months respectively.

Of the 162 patients with extended disease (Table II), the 126 cases treated with chemotherapy alone had a mean survival time of 4.9 months, the 34 patients treated with combined chemo and radiotherapy of 8 months, while the 2 patients who underwent surgery and adjuvant chemotherapy survived 6 and 8 months.

## Discussion

Small-cell lung cancer is a malignant neoplasm which has an extremely unfavourable prognosis, owing to its biological aggressiveness and to its elevated cellular reproduction.

The median survival time of patients with limited and extended disease is 12-16 and 7-11 months respectively<sup>4</sup>.

A correct staging of the disease is, however, mandatory for the choice of treatment and prognostic evaluation<sup>5</sup>.

Chemotherapy alone gives disappointing results: only 5% of patients survives to five years<sup>8</sup>.

Nowadays the approach to small-cell lung cancer appears multidisciplinary in our as in other authors' studies.

Several authors have reported that the percentage of patients with limited disease, surviving to five years, increases if the therapy is based on a combination of surgery and post-operative chemotherapy<sup>2,6,7</sup>.

Other reports, for patients treated by surgery and adjuvant chemotherapy, 5-years survival rates of 51% for stage I patients, of 28% for stage II patients, and 19% for the stage III patients<sup>8</sup>. The Toronto group reports 5-year survival rates of 20-40% for stage II and IIIA patients with surgical resection and adjuvant chemotherapy<sup>9</sup>.

As described in recent studies, the use of neo-adjuvant chemotherapy improves local control of the disease<sup>6</sup> and, in some cases, achieves a histological regression of the tumor, converting it from a small-cell cancer to a form of carcinoma with a lower degree of biological aggressiveness<sup>10</sup>.

Furthermore, prognostic improvement is observed with the association of local radiotherapy to chemotherapy<sup>11,12</sup>; some authors suggest even that prophylactic cranial irradiation can reduce the incidence of cerebral metastases<sup>13</sup>.

The importance of surgical treatment as the first step in the management of small-cell lung cancer achieves, with the elimination of the neoplastic mass, also the reduction of

Table II. Extended disease.

N° patients	Type of treatment	Mean survival time (months)
126	Chemotherapy	4.9
34	Chemotherapy + radiotherapy	8.0
2	Surgery + chemotherapy	7.0

neoplastic cells that must be attacked by adjuvant chemo- and radiotherapy. Reduction of the neoplastic cell mass improves the efficacy of chemo- and radiotherapy and decreases the probability of selection of neoplastic clones resistant to post-operative pharmacological treatment<sup>14</sup>.

Our data show that the best results, in terms of survival time, were achieved in patients with limited disease treated by surgery and adjuvant chemotherapy or chemo and radiotherapy.

Also patients with extended disease show a better survival when treated with surgery compared to those treated with chemotherapy alone, even though the numbers are very small.

However, in case of extended disease, if mean survival times of patients treated with surgical therapy and adjuvant chemotherapy are compared with those of patients subjected to combined chemo- and radiotherapy, the results are practically the same, confirming that the less extensive the illness is, the more effective surgical treatment is.

In conclusion, the treatment of small-cell lung cancer appears nowadays multidisciplinary. The introduction of new oncologic protocols (including those recently proposed with peripheral blood stem cell transplantation)<sup>15</sup> plays a fundamental role in local and distant control in the neoplasia but the results of pharmacologic therapy, in patients with limited disease, improve significantly the prognosis only in association with surgery.

Therefore the role of surgery in the management of SCLC has been reappraised and represents a fundamental step in the treatment of patients with limited stage disease.

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