Long-term survival after bronchial sleeve resection in relation to nodal involvement

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In 1996 we reported the results of 145 bronchial sleeve resections performed for bronchogenic tumors from 1960 to 1989 [1]. Controversial results have been reported regarding long-term survival after sleeve resection in relation to nodal involvement [2–4]. A revised stage classification was introduced in 1997 [5]. In our series follow-up was updated until 1999, so a minimum follow-up of 10 years was obtained for surviving patients. A univariate and multivariate analysis were performed to determine significant factors related to survival. Stage IB disease was found in 61 patients (42.1%), stage IIB in 57 (39.3%), stage IIIA in 23 (15.9%) and stage IIIB in 4 (2.7%).

Actuarial survival for all 145 patients was 0.45 ± 0.04 after 5 years, 0.35 ± 0.04 after 10 years and 0.23 ± 0.04 after 15 years. Regarding lymph node involvement, 10-year survival for N0 disease was 0.53 ± 0.06, for N1 disease 0.21 ± 0.05, and for N2 disease 0.06 ± 0.06 (Fig.1). A highly significant difference was found between N0 and N1 disease (P < 0.0001) and between N0 and N2 disease (P < 0.0001). The difference between N1 and N2 disease reached statistical significance (P = 0.047).

Causes of death were analyzed according to nodal category. Looking at the different N groups, there was no difference in local recurrence rate as a cause of death (P > 0.25). However, comparing distant metastases between N0 disease and the two other subgroups, the difference was highly significant (P < 0.005). Ten-year survival rate for stage IB disease was 0.49 ± 0.06, IIB 0.29 ± 0.06, IIIA 0.16 ± 0.08; IIIB 0.00 ± 0.00.

Multivariate analysis with the Cox proportional hazards model showed only two significant variables in relation to survival: nodal stage (P < 0.0001) and age of the patient (P = 0.0007).

The relationship between long-term survival after sleeve lobectomy and lymph node involvement remains controversial. Those recent studies reporting 5- and 10-year survival rates are summarized in Table 1. The 5-year survival rate in patients with N1 disease ranges from 29 to 46%, and in N2 disease from 0 to 33%. Mehran and colleagues also found a highly significant difference between N0 and N2 disease, between N1 and N2 disease, but no difference between N0 and N1 disease [2]. However, in their most recent data presented at the EACTS meeting in Glasgow, September 1999 (abstract no. 196 presented by F. Tronc) a significant difference was found between N0 and N1 disease.

Should a pneumonectomy be done in case of N1 disease? When analyzing the cause of death in our series, most of the...
patients with N1 or N2 disease died of distant metastases. So, in our opinion, N1 disease is no contraindication for sleeve resection but patients with N1 or N2 disease should be regarded as having systemic disease and adjuvant treatment should be considered.

In our multivariate analysis the new stage classification of 1997 was no independent factor in relation to survival, the most significant factor being nodal stage.

References


Appendix A. Conference discussion

Dr J. Hasse (Freiburg, Germany): As a question: you had quite a considerable proportion of patients in all categories who died from other reasons than progression of carcinoma. Were those mainly cardiovascular disease or other cancers? Could you comment on that?

Dr Van Schil: Most of the patients dying of other diseases died primarily of cardiovascular diseases, and the second cause was other malignancies outside the chest.

Mr A. Ritchie (Cambridge, UK): Could I ask that your results would be much clearer if you took the 10% or so of carcinoid patients out. This is because the crux of the paper is whether sleeve resection is a good tumor operation or not.

And can I ask you just then, on that basis, to comment on the survival of N0 stage patients who should effectively have a surgical cure of their tumor. Do you think in that group of patients this is a good cancer operation?

Dr Van Schil: Regarding histological type and long-term survival, we included the 13 patients with carcinoid tumor, as they are listed under malignant invasive epithelial tumors in the most recent World Health Organization classification. Fifteen-year survival in this group was indeed 100%. But those were only 13 patients. In the 116 patients with squamous cell carcinoma, we had a very good survival in N0 disease and rather poor survival in N1 or N2 disease.

There is a group from Canada, Dr Deslauriers’, who will present their updated results in another session, who find a much better survival in N1 disease than we did. But they included many cases of sleeve resections for hilar N1 involvement, which was rather exceptional in our series. But in fact, besides the carcinoid tumors, the patients with squamous cell carcinoma, N0 disease, have a far better prognosis than, for example, N1, N2 disease or the patients with adenocarcinoma where we had a 5-year survival rate of only 22%.

Table 1

<table>
<thead>
<tr>
<th>References Year</th>
<th>No. of patients</th>
<th>5-Year survival</th>
<th>10-Year survival</th>
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<tr>
<td>Mehran et al. [2] 1994</td>
<td>142</td>
<td>N0: 57, N1: 46, N2: 0</td>
<td>N0: 46, N1: 27, N2: 0</td>
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