



# RESULTS FROM THE SPANISH GROUP OF PLEURAL LAVAGE

José Luis Recuero Díaz MD, PhD
*Department of Thoracic Surgery. Miguel Servet University Hospital, Zaragoza, Spain*

## INTRODUCTION

Lung cancer is the leading cause of cancer death in the world with an overall 5-year survival of around 16%. Recurrence rates range between 30-75%, with the majority occurring in the first 2 years. Identifying patients at high risk for recurrence is essential to be able to carry out closer follow-ups and assess complementary treatments.

The first publication on the implications of pleural lavage cytology was carried out by Eagan in 1984. In his work he observed an incidence of pleural lavage cytology of around 10%, observing survival differences between 25-30% with respect to those patients with negative cytology. A meta-analysis in 2010 published by the International Pleural Lavage Cytology Collaborators observed that positive cytology in pleural lavage was an independent factor of poor prognosis, and these patients could be re-staged at a higher T up to a maximum of T4.

There are multiple published studies that attempt to identify the factors related to positive pleural lavage cytology. The incidence in these studies ranges between 3 to 22%, observing multiple possible factors related to its positivity. The most consistent factors have been pleural involvement, histology, pathological stage and lymphatic involvement.

The main objective of the Spanish Group of Pleural Lavage was to evaluate the positivity of pleural lavage cytology with early recurrence.

## METHODS

This is a multicentre prospective cohort study in which 12 national centres have participated. Anatomical lung resections were included in patients older than 18 years old with a diagnosis or suspicion of non-small cell lung cancer, between October 2015 to October 2017. The final sample size calculated was 647 patients. Early recurrence was defined as that occurring in the first two years, the main variable to be analysed in our study.

Before and after lung resection and lymphadenectomy and previously any manipulation, the pleural cavity was washed with 100cc of physiological saline, extracting 50cc at each moment. Each sample was divided into two, with one of them performing 2 cytological extensions and with the other sample a cell block with haematoxylin and eosin staining. According to the results, the corresponding immunohistochemical technique was applied according to histology.

The corresponding statistical analyses were carried out. In a first analysis we tried to identify factors related to positivity in pleural lavage. In a subsequent analysis, we looked for those factors related to early recurrence, building a model to try to predict recurrence. The suitability of the model was evaluated using ROC curves.

**RESULTS**

The mean age of the sample was 66.2 years of age, most of the patients being men and smokers. Most of the clinical stages were stage I. Almost all the resections were major with a similar distribution between approaches. The most frequent histology was adenocarcinoma. Pleural invasion was observed in 35% of the patients. The most frequent pathological stages were also stage I. In our study, we obtained a significantly lower positive rate of pleural lavage than in other studies. The pre-resection positivity was 0.9%, the post-resection 1.9% with an overall positivity of 2.2%. After 2 years of follow-up, 193 patients recurred, this is 28.2%, with a similar distribution between locoregional and distant recurrence.

A univariate analysis was carried out in search of factors related to the positivity of the pleural lavage. Only adenocarcinoma histology, tumour differentiation, pleural involvement and the pN1 descriptor remained significant.

Subsequently, we carried out a univariate analysis in search of factors related to early recurrence, being one of the significant variables the positivity of the pleural lavage cytology. The risk model was constructed to predict recurrence in the cohort of patients. The model with the best AIC criterion was the one that included the 4 significant variables in the multivariate analysis: SUV> 5 in the PET, adenocarcinoma histology, pathological stage, and positivity in the pleural lavage. The area under the curve was 0.68 and the cut-off point chosen was 0.28, for which the sensitivity was 0.69 and the specificity 0.61.

**CONCLUSIONS**

Poorly differentiated adenocarcinoma with lymph node and parietal pleural involvement had a higher risk of PLC positivity. Of the prognostic factors analysed, positive pleural lavage was the most important determinant of early recurrence. It would be advisable to consider performing pleural lavage techniques routinely in large population-based registries. Its routine performance and the possibility of adapting the different oncological follow-up and adjuvant strategies according to its positivity should be assessed. Despite a modest discriminative capacity, the model obtained could help to determine target populations for future clinical trials related to these strategies.