



Prognostic Value of Lymph Node Downstaging vs Primary Tumor Response in Neoadjuvant Immunotherapy

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IASLC 2026 World
Conference on Lung Cancer

SEPTEMBER 12 - 15, 2026
SEOUL, REPUBLIC OF KOREA

INTRODUCTION

Neoadjuvant immunotherapy has markedly improved clinical outcomes in patients with resectable non-small cell lung cancer (NSCLC). While major pathological response (MPR) and pathological complete response (pCR) of the primary tumor are established surrogates for survival, the independent prognostic significance of lymph node (N) downstaging and final pathological nodal status (ypN) remains insufficiently characterized. We hypothesize that pathological nodal clearance serves as a superior and more pivotal predictor of systemic disease-free survival (DFS) compared with primary tumor response alone.

METHODS

We retrospectively evaluated a cohort of 167 patients with resectable NSCLC who received neoadjuvant immunotherapy followed by surgical resection with valid survival follow-up. The primary endpoint was DFS. Primary tumor response was categorized according to residual viable tumor (RVT) as pCR (RVT = 0%), MPR (0% < RVT ≤ 10%), and non-MPR (RVT > 10%). Nodal response was assessed by N downstaging and final postoperative nodal status (ypN0 vs. ypN+). Survival analyses were conducted using the Kaplan–Meier method and log-rank tests to evaluate the prognostic effects of both tumor and nodal responses.

DISCUSSION AND CONCLUSION

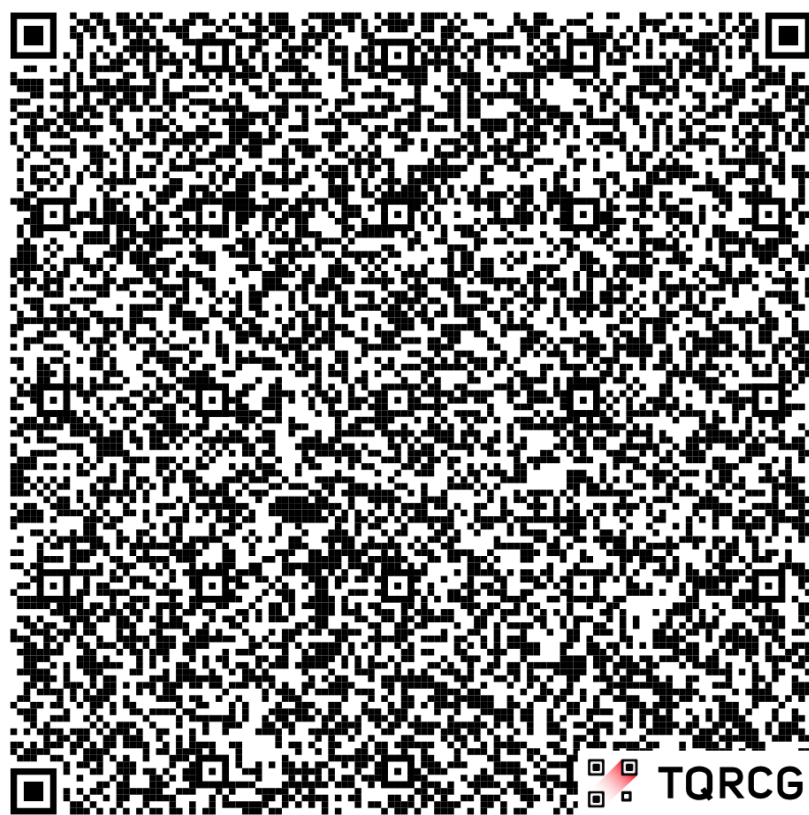
The data strongly support the hypothesis: although primary tumor pCR correlates with prolonged DFS, lymph node clearance (ypN0) represents the most critical determinant of long-term survival following neoadjuvant immunotherapy. Patients with residual nodal disease (ypN+), irrespective of the extent of primary tumor response, are at markedly increased risk of early systemic relapse. These findings suggest that ypN+ status should be prioritized as the principal clinical criterion for intensifying postoperative adjuvant systemic therapy.

REFERENCES & ACKNOWLEDGEMENTS

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The AI tool was not used to design the study, analyze or interpret data, generate scientific concepts, or draw clinical/research conclusions.



RESULTS

Among the 167 patients, primary tumor response exhibited a stepwise correlation with DFS. Patients achieving pCR (n = 37) had a progression rate of 32.4% (median DFS not reached), those with MPR (n = 31) had 61.3% (median DFS 34.2 months), and those with non-MPR (n = 99) had 81.8% (median DFS 17.9 months). Nodal downstaging was observed in 88 patients, with a progression rate of 40.9% (median DFS 55.1 months) compared with 96.2% (median DFS 16.3 months) in those without downstaging (n = 79). Postoperative nodal clearance (ypN0, n = 78) was associated with a 33.3% progression rate and a median DFS not reached, whereas residual nodal disease (ypN+, n = 89) was associated with a 96.6% progression rate and a median DFS of only 17.1 months.

PROGNOSTIC IMPACT OF NEOADJUVANT IMMUNOTHERAPY: TUMOR VS. NODAL PATHOLOGICAL RESPONSE ON DISEASE-FREE SURVIVAL (DFS)

