Systematic literature review (SLR) of efficacy, health-related quality of life (HRQOL), and safety of immunotherapies for perioperative treatment of early-stage non-small cell lung cancer (NSCLC)

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ABSTRACT

Objectives: Recent advancements in targeted and immunotherapies have shown promise in early-stage NSCLC. Evaluating their efficacy, safety, and impact on HRQoL is essential for supporting evidence-based clinical practice and improving patient outcomes. This SLR aimed to synthesize evidence on the clinical efficacy, safety, and HRQoL of current immunotherapies for the perioperative treatment of early-stage NSCLC (resectable, stage II–IIIA).

Methods: A protocol-driven SLR following PRISMA standards was conducted in September 2024 to gather evidence from randomized controlled trials on survival, response, surgical, safety, and HRQoL outcomes. Searches were conducted in electronic databases and supplemented by additional sources (bibliographic screening, review of regulatory documents, clinical trial registries and health technology assessments), with dual screening by two independent screeners at both abstract and full-text levels.

Results: Out of 1,680 screened abstracts and 92 full-text records, 63 records from 13 unique clinical trials were included, categorized into perioperative (n = 7), neoadjuvant (n = 3), and adjuvant (n = 3) settings. In the perioperative setting (neoadjuvant+adjuvant), median overall survival (OS) was not reached in any trials, however tislelizumab (hazard ratio [HR]: 0.62, 95% confidence interval [CI]: 0.39-0.98), pembrolizumab (HR: 0.73, 95% CI: 0.54-0.99), and nivolumab (HR: 0.43, 95% CI: 0.19-0.98) demonstrated OS benefits against placebo. Nivolumab plus chemotherapy showed OS (HR: 0.57, 95% CI: 0.38-0.87) benefit in the neoadjuvant setting. HRQoL was only available for nivolumab in the perioperative and neoadjuvant settings. In the adjuvant setting, pembrolizumab and atezolizumab showed minor DFS (disease-free survival) improvements but no significant OS benefits; safety events were generally lower than those in neoadjuvant and perioperative settings.

Conclusion: This SLR underscores the efficacy benefits and safety profiles of immunotherapies for early-stage NSCLC, with tislelizumab, pembrolizumab, and nivolumab showing survival benefits in the perioperative setting, nivolumab plus chemotherapy showing efficacy in the neoadjuvant setting, and adjuvant immunotherapies showing limited impact on OS and DFS.