Considerations of the Patient Selection for Perioperative CIO Therapy in NSCLC

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The primary strategies for improving lung cancer outcomes are early diagnosis and complete surgical resection. However, not all patients diagnosed at an early stage and treated with curative-intent surgery achieve long-term survival. A considerable proportion experience postoperative recurrence despite “complete” resection. The predominant cause of relapse is occult micrometastasis present at the time of diagnosis, which remains undetectable by current imaging and diagnostic modalities. These residual malignant cells can only be eradicated through effective systemic therapy.

The landmark International Adjuvant Lung Cancer Trial (IALT), published nearly two decades ago, demonstrated that adjuvant chemotherapy confers an approximate 5% overall survival benefit. More recently, perioperative chemo-immunotherapy (CIO) has produced substantial further improvements in survival outcomes, firmly establishing its clinical value, for patients with stage II and III non–small cell lung cancer (NSCLC). Nonetheless, concerns persist regarding toxicity, encompassing both physical adverse effects and financial burden.

It is also important to recognize that the benefit of perioperative therapy is not universal. Approximately 30% of patients achieve long-term cure following surgery alone and would never relapse, regardless of additional systemic therapy. Conversely, nearly half of patients will ultimately relapse despite perioperative treatment, reflecting the limitations of current therapeutic approaches. Only about 10–15% of patients derive true survival benefit from perioperative regimens.

Therefore, the central challenge for the coming years lies in refining patient selection for perioperative therapy. Identifying reliable clinical characteristics, biomarkers, and/or predictive tools to stratify patients by recurrence risk and therapeutic responsiveness will be essential. Such precision strategies would maximize the therapeutic benefit while minimizing unnecessary toxicity and healthcare costs, thereby advancing the personalization of care in resectable NSCLC.