Supplementary Methods

Inclusion criteria

1. Previously untreated patients with pathologically confirmed non–small cell lung cancer of stage IIIA/N2 according to the *American Joint Committee on Cancer Staging Manual* 8th edition.
2. Patients should have received the institutional standard protocol of neoadjuvant concurrent chemoradiation therapy with 44-Gy thoracic radiotherapy (RT) in 2 Gy fractions beginning on day 1 plus paclitaxel (50 mg/m^2) and cisplatin (25 mg/m^2) on days 1, 8, 15, 22, and 29, followed by complete surgical resection, as defined by the International Association for the Study of Lung Cancer [1].
3. No evidence of disease on clinical examination and radiographic assessment per Response Evaluation Criteria in Solid Tumors ver. 1.1 after surgery.
4. Patients aged ≥ 18.
5. Eastern Cooperative Oncology Group performance status 0-1.
6. Willingness to provide diagnostic and surgical tissue samples to assess tumor programmed cell death ligand 1 expression and immune cell phenotypes.
7. Screening laboratory values must meet the following criteria and be obtained within 14 days before study entry.
   1) Absolute neutrophil count ≥ 1,500×10^6/L
   2) Platelet count ≥ 100×10^9/L without transfusion for 7 days
   3) Hemoglobin ≥ 9 g/dL without transfusion for 7 days
   4) Serum creatinine < 1.5× upper limit of normal (ULN) or creatinine clearance ≥ 60 mL/min
   5) Serum total bilirubin < 1.5× ULN (except subjects with Gilbert syndrome, who can have direct bilirubin < ULN when total bilirubin ≥ 1.5× ULN)
   6) Serum AST/ALT < 5 × ULN
   7) Serum albumin ≥ 2.5 mg/dL
   8) Prothrombin time/international normalized ratio (PT-INR)/activated partial thromboplastin time (APTT) < 1.5× ULN (except subjects receiving anticoagulant therapy, who can have PT-INR/APTT within therapeutic range)
8. Patients who are capable of proper compliance to the study protocol including screening, study treatment, and post-treatment follow-up.
9. Women of childbearing potential (including those who had their last menstrual period in the last 1 year) must have a negative serum or urine pregnancy test within 72 hours before receiving the first dose of pembrolizumab.

10. All sexually active men and women of childbearing potential must use an effective contraceptive method during the study treatment and for 120 days following the last administration of the study drug.

Exclusion criteria

1. Participation in other therapeutic clinical trials within 28 days.
2. Prior treatment for NSCLC.
3. Prior programmed death-1/PD-L1 inhibitor treatment for any indication.
4. Use of immunosuppressive medication or systemic corticosteroid within 28 days.
5. Active malignancy requiring concurrent treatment.
6. Previous malignancies (except for cutaneous squamous or basal cell carcinoma, early gastric cancer, nonmetastatic well-differentiated thyroid carcinoma, and cervical intraepithelial neoplasia), unless in complete remission for ≥ 2 years with no further needed.
7. History of autoimmune disease requiring systemic immunosuppression within 2 years.
8. History of interstitial lung disease.
9. Active infection requiring systemic treatment.
10. History of allogeneic organ transplantation.
11. Positive test for human immunodeficiency virus infection or known acquired immunodeficiency syndrome.
12. Positive test for hepatitis B virus (HBV) surface antigen, HBV DNA, hepatitis C virus (HCV) antibody, or HCV RNA.
13. Patients who have received live-attenuated vaccines within 30 days.
14. QT interval (corrected using the Bazett's formula) ≥ 470 msec.
15. Any medical, mental, or psychological condition which in the investigator's opinion would not permit the patient to understand the patient information or complete the study procedures.
16. Pregnancy or breastfeeding.
17. Sexually active men and women of childbearing potential who are not willing to use an effective contraceptive method during the study and for 120 days after.

Reference

1. Rami-Porta R, Wittekind C, Goldstraw P. Complete resection in lung cancer surgery: from definition to validation and beyond. J Thorac Oncol. 2020;15:1815-8.