Tumor Treating Fields (TTFields, 150 kHz) Concurrent with Standard of Care Treatment for Stage 4 Non-Small Cell Lung Cancer (NSCLC) in Phase 3 Lunar Study

Background Tumor Treating Fields (TTFields) are a non-invasive, anti-mitotic treatment that disrupts the formation of the mitotic spindle and dislocation of intracellular constituents. TTFields plus temozolomide significantly extended survival in newly diagnosed glioblastoma. Efficacy of TTFields in NSCLC has been shown in preclinical models as well as safety in combination with pembrolizumab in a pilot study. In the Phase 3 LUNAR study [NCT02973789], we investigated if the addition of TTFields to immune checkpoint inhibitors or docetaxel increases overall survival (OS).

Methods Patients (N=534), with squamous or non-squamous NSCLC, are stratified by their selected standard therapy (immune checkpoint inhibitors or docetaxel), histology and geographical region. Key inclusion criteria are disease progression (ECOG 0-2), no electronic medical devices in the upper torso, and absence of brain metastasis. TTFields (150 kHz) are applied to the upper torso for ≥18 hours/day until progression in the thorax and/or liver. The primary endpoint is superiority in OS between patients treated with TTFields in combination with the standard of care treatments versus standard of care treatments alone. Key secondary endpoints compare the OS in patients treated with TTFields and docetaxel versus docetaxel alone, and patients treated with TTFields and immune checkpoint inhibitors vs those treated with immune checkpoint inhibitors alone. An exploratory analysis will test non-inferiority of TTFields with docetaxel compared to checkpoint inhibitors alone. Secondary endpoints include progression-free survival, radiological response rate, quality of life based on the EORTC QLQ C30 questionnaire. The sample size is powered to detect a HR of 0.75 in TTFields-treated patients versus control group. In March 2020, an independent Data Monitoring Committee (DMC) performed a review of the LUNAR trial data collected to that point. The DMC concluded that no unexpected safety issues could be found in patients treated with the combination of immune checkpoint inhibitors and TTFields, and recommended to continue the LUNAR study as planned.

Results N/A

Conclusions N/A

Acknowledgements N/A

Trial Registration NCT02973789

Ethics Approval The study was approved by participating centers’ Institution’s Ethics Boards, NCT02973789

Consent Not applicable

REFERENCE
1. N/A

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Abstracts

A randomized double-blind placebo-controlled Phase III study evaluating perioperative toripalimab combined with platinum-based doublet chemotherapy in resectable stage III NSCLC

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Background Surgery remains the mainstay of treatment for resectable stage III non-small cell lung cancer (NSCLC). The preliminary results from some pilot trials have shown that neoadjuvant immunotherapy in NSCLC is safe and tolerable. Hypothesizing that neoadjuvant toripalimab (a humanized anti-PD-1 antibody) plus chemotherapy can improve the outcome in resectable NSCLC, we are conducting a randomized, double-blind, placebo-controlled, phase III study to evaluate the efficacy and safety of toripalimab plus platinum-based doublet chemotherapy as neoadjuvant/adjuvant therapy for patients with resectable stage III NSCLC.

Methods This ongoing study enrolls patients aged 18–70 years with treatment-naïve, histopathologically confirmed resectable stage III NSCLC without EGFR mutation or ALK translocation, ECOG PS 0–1, and adequate organ function. Eligible subjects are randomized (1:1) into experimental or control group, to receive perioperative toripalimab 240 mg or placebo combined with chemotherapy for 4 cycle in total (Docetaxel 60–75 mg/m^2 or Paclitaxel 175 mg/m^2 with platinum [squamous histology] or Pemetrexed 500 mg/m^2 with platinum [non-squamous histology]) every 3 weeks for three cycles followed by surgery, and one more cycle after surgery, then monotherapy of toripalimab 240 mg or placebo every 3 weeks up to 13 cycles is delivered. Adjuvant radiotherapy is allowed. Randomization is stratified by tumor stage (IIIA vs IIIB), pathological type (squamous vs non-squamous), PD-L1 expression (PD-L1>1% vs <1% or not evaluable) and planned surgical procedure (pneumonectomy vs lobectomy). Radiographic response is assessed within 4–6 weeks after last dose of neo-adjuvant therapy, at 30 days after surgery and every 12 weeks thereafter. Primary endpoints are majorpathologic response (MPR) rate evaluated by blind independent central pathology review (BIPR-MPR) and event-free survival evaluated by investigator (INV-EFS). Secondary endpoints include pathologic complete response (pCR) rate evaluated by BIPR and investigators (BIPR-pCR and INV-pCR), disease-free survival (DFS), 2–3 years OS rate, OS, safety, and feasibility of surgery.