BERLIN 2025 ESMO congress

LBA70

Association of radiomic features ± on-treatment ctDNA detection with treatment outcomes in patients with resectable NSCLC: Exploratory analyses from AEGEAN

J. Heymach[1], D. Harpole[2], T. Mitsudomi[3], J.M. Taube[4], T. Winder[5], A.C. Chen[6], T.M. Fouad[6], Q. Li[7], K.A. Patwardhan[7], H. RaviPrakash[7], J. Faria[8], D. Salazar[8], B. Manry[9], D. Gale[10], Z. Zhu[9], M. Reck[11]

[1] Department of Thoracic/Head and Neck Medical Oncology, The University of Texas, MD Anderson Cancer Center, Houston, United States of America, [2] Department of Surgery, Duke University Medical Center, Durham, United States of America, [3] Division of Thoracic Surgery, Department of Surgery, Kindai University Faculty of Medicine, Osaka-Sayama, Japan, [4] Department of Pathology, Bloomberg–Kimmel Institute for Cancer Immunotherapy, Johns Hopkins Kimmel Cancer Center, Baltimore, United States of America, [5] Department of Hematology, Oncology, Gastroenterology and Infectiology, Landeskrankenhaus Feldkirch, Feldkirch, Austria, [6] Late Development Oncology, Oncology R&D, AstraZeneca, New York, United States of America, [7] Cancer Biomarker Development, AstraZeneca, Waltham, United States of America, [8] Oncology Data Science and AI, AstraZeneca, Cambridge, United Kingdom, [9] Oncology Data Science and AI, AstraZeneca, Gaithersburg, United States of America, [10] Cancer Biomarker Development, AstraZeneca, Cambridge, United Kingdom[11] Department of Thoracic Oncology, Lung Clinic Grosshansdorf, Airway Research Center North, German Center for Lung Research, Grosshansdorf, Germany

Background

In AEGEAN, perioperative durvalumab (D) + neoadjuvant (neoadj) chemotherapy (CT) significantly improved event-free survival (EFS) and pathological complete response (pCR) vs CT alone in patients (pts) with resectable NSCLC (R-NSCLC). In prior analyses from AEGEAN, ctDNA clearance during neoadj treatment (Tx) was associated with EFS and pCR, and radiological response after neoadj Tx in the D arm was associated with pCR. Here, we report exploratory analyses of associations between radiomic features ± on-treatment ctDNA detection with pCR and EFS.

Methods

AEGEAN is a double-blind placebo (PBO)-controlled study (NCT03800134). Pts with Tx-naïve R-NSCLC (stage II–IIIB [N2]) were randomised (1:1) to neoadj platinum-based CT + D or PBO IV (Q3W, 4 cycles), followed by D or PBO IV (Q4W, 12 cycles) after surgery (Sx). Radiological tumour assessment was based on CT scans and ctDNA analysis performed using pt-specific tumour-informed assays. Changes in radiomic features (delta energy of primary lung tumour) from screening to pre-Sx ± ctDNA detection status (i.e., positive or negative) at C3D1 were used to predict pCR and assessed via Cox regression models for associations with EFS.

Results

Of 366 mITT pts in the D arm, radiomics data were available for 235 (rBEP) of whom 111 also had ctDNA status data at C3D1 (rcBEP_C3D1). Radiomic features predicted pCR with an AUC of 0.78 and 0.82 in the rBEP and rcBEP_C3D1, respectively; radiomic features + ctDNA status predicted pCR with an AUC of 0.84 in the rcBEP_C3D1 (Table). Radiomic features were associated with EFS with C-indices of 0.668 and 0.708 in the rBEP and rcBEP_C3D1, respectively; radiomic features + ctDNA status were associated with EFS with a C-index of 0.787 in the rcBEP_C3D1.Table: LBA70

	rBEPn=235	rcBEP_C3D1n=111
Radiomic features		
pCR model, AUC (95% CI)	0.78 (0.75–0.81)	0.82 (0.78–0.86)
EFS model, C-index ± SE	0.668 ± 0.031	0.708 ± 0.041
Radiomic features + C3D1 ctDNA		
pCR model, AUC (95% CI)	–	0.84 (0.80–0.88)
EFS model, C-index ± SE	–	0.787 ± 0.035

Not shown: models using baseline clinical variables ± radiomic features ± C3D1 ctDNA status performed worse (AUC ≤0.76).AUC, area under curve; C3D1, cycle 3, day 1; C-index, concordance index; CI, confidence interval; mITT, modified intent-to-treat; pCR, pathological complete response; rBEP, radiomics biomarker evaluable population; rcBEP_C3D1, radiomics + ctDNA biomarker evaluable population at C3D1; SE, standard error.

Conclusions

In AEGEAN, radiomic features ± C3D1 ctDNA status predicted pCR and had a good association with EFS, suggesting their potential use as early-response biomarkers.

Clinical trial identification

NCT03800134, release date: January 11, 2019.

Editorial acknowledgement

Medical writing support for the development of this abstract, under the direction of the authors, was provided by Alice Walter, BSc, of Ashfield MedComms (London, UK), an Inizio company, and was funded by AstraZeneca.

Legal entity responsible for the study

AstraZeneca.

Funding

AstraZeneca.

Disclosure

J. Heymach: Financial Interests, Personal, Full or part-time Employment: The University of Texas MD Anderson Cancer Center ; Financial Interests, Personal, Royalties: Spectrum ; Financial Interests, Institutional, Research Funding: AstraZeneca, Boehringer-Ingelheim, Mirati, Bristol-Myer Squibb and Takeda; Financial Interests, Personal, Advisory Board: AbbVie, AnHeart Therapeutics, ArriVent Biopharma, AstraZeneca, BioCurity Pharmaceuticals, BioNTech AG, Blueprint Medicines, BI, BMS, Chugai Pharmaceutical, Curio Science, DAVA Oncology, Eli Lily & Co, EMD Serono, Genentech, GSK, IDEOlogy Health, InterVenn Biosciences, Janssen Biotech, Janssen Pharmaceuticals, Mirati Therapeutics, Moffitt Cancer Center, ModeX, Nexus Health Systems, Novartis Pharmaceuticals, OncoCyte, RefleXion, Regeneron Pharmaceuticals, Roche, Sandoz Pharmaceutic, Takeda, uniQure. D. Harpole: Non-Financial Interests, Personal and Institutional, Invited Speaker: AstraZeneca; Non-Financial Interests, Personal and Institutional, Speaker's Bureau: AstraZeneca; Non-Financial Interests, Personal and Institutional, Advisory Board: AstraZeneca; Financial Interests, Institutional, Research Funding: AstraZeneca. T. Mitsudomi: Financial Interests, Personal, Advisory Board: Regeneron, Ono, Janssen, Bristol Myers Squibb, Novartis, AstraZeneca; Financial Interests, Personal, Invited Speaker: Merck Sharp & Dohme, Ono, Bristol Myers Squibb, Daiichi Sankyo, Pfizer, Amgen, Chugai, Novartis, Boehringer Ingelheim, Novocure; Non-Financial Interests, Personal, Principal Investigator: AstraZeneca, Bristol Myers Squibb. J.M. Taube: Financial Interests, Personal, Advisory Board: Bristol Myers Squibb, Merck, AstraZeneca, Roche, Regeneron, Quanterix, Elephas, Compugen, Moderna, NextPoint; Financial Interests, Institutional, Research Grant: Bristol Myers Squibb, Quanterix. T. Winder: Financial Interests, Personal, Advisory Board: AstraZeneca, Merck Sharp & Dohme, Bristol Myers Squibb, Roche, AMGEN, Incyte, Daiichi Sankyo, Servier, Merck, Janssen; Financial Interests, Personal, Invited Speaker: AstraZeneca, Merck Sharp & Dohme, Bristol Myers Squibb, Roche, AMGEN, Incyte, Daiichi Sankyo, Servier, Merck, Janssen; Financial Interests, Personal, Principal Investigator: AstraZeneca, Daiichi Sankyo. A.C. Chen: Financial Interests, Personal, Full or part-time Employment: AstraZeneca. T.M. Fouad: Financial Interests, Personal, Full or part-time Employment: AstraZeneca. Q. Li, J. Faria: Financial Interests, Personal, Full or part-time Employment: AstraZeneca; Financial Interests, Personal, Stocks or ownership: AstraZeneca. K.A. Patwardhan, H. RaviPrakash, D. Salazar, B. Manry, Z. Zhu: Financial Interests, Personal, Full or part-time Employment: AstraZeneca; Financial Interests, Personal, Stocks/Shares: AstraZeneca. D. Gale: Financial Interests, Institutional, Full or part-time Employment: AstraZeneca; Financial Interests, Personal, Stocks/Shares: AstraZeneca, GSK. M. Reck: Financial Interests, Personal, Invited Speaker: Amgen, AstraZeneca, BMS, Boehringer-Ingelheim, Lilly, MSD, Merck, Novartis, Regeneron, Roche, Sanofi, GSK, Pfizer, Pierre Fabre; Financial Interests, Personal, Advisory Board: Amgen, AstraZeneca, BMS, Biontech, Boehringer-Ingelheim, Daiichi Sankyo, Gilead, MSD, Mirati, Pfizer, Regeneron, Roche, Sanofi, GSK, Lilly, Pierre Fabre; Financial Interests, Personal, Other, Member of DMSB: Daiichi Sankyo; Financial Interests, Personal, Other, Member of Data Monitoring Committee: Servier, CureVac; Financial Interests, Personal, Coordinating PI: AstraZeneca; Financial Interests, Institutional, Steering Committee Member: Amgen, Boehringer-Ingelheim, BeiGene, Daiichi Sankyo, GSK, BMS, Lilly, MSD, Regeneron, Roche; Financial Interests, Institutional, Local PI: Pfizer Seagen, Nuvalent.