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CLINICAL Lung Cancer

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Original Studies

331 First-line Pembrolizumab Versus Pembrolizumab Plus Chemotherapy Versus Chemotherapy Alone in Non–small-cell Lung Cancer: A Systematic Review and Network Meta-analysis

Ryul Kim, Bhumsuk Keam, Seokyung Hahn, Chan-Young Ock, Miso Kim, Tae Min Kim, Dong-Wan Kim, Dae Seog Heo

Immunotherapy has revolutionized lung cancer management. Our study focused on the efficacy of first-line pembrolizumab for treatment of non–small-cell lung cancer by summarizing 4 phase III clinical trials. This analysis revealed that pembrolizumab in combination with chemotherapy exhibited better survival outcome than pembrolizumab monotherapy.

339 Computed Tomography Imaging Characteristics of Non–Small-Cell Lung Cancer With Anaplastic Lymphoma Kinase Rearrangements: A Systematic Review and Meta-Analysis

Dexter P. Mendoza, Justin Stowell, Alona Muzikansky, Jo-Anne O. Shepard, Alice T. Shaw, Subba R. Digumarthy

We analyzed all published research and compared the imaging features of anaplastic lymphoma kinase (ALK)-rearranged non–small-cell lung cancer (NSCLC) patients with those without ALK rearrangements. This meta-analysis included 12 studies with 2210 NSCLC patients, 456 of whom had ALK rearrangement. We found that ALK-rearranged NSCLC patients have distinct clinical and imaging features, which might assist in selecting patients who might benefit from expedited or repeat molecular testing when necessary.

350 Clinical Impact of Rare and Compound Mutations of Epidermal Growth Factor Receptor in Patients With Non–Small-Cell Lung Cancer

Juliane Martin, Annika Lehmann, Frederick Klauschen, Michael Hummel, Dido Lenze, Christian Grohé, Antje Tessmer, Joachim Gottschalk, Berndt Schmidt, Hans-Wilhelm Pau, Christian Witt, Stefan Moegling, Robert Kromminga, Korinna Jöhrens

Lung cancer samples were analyzed for epidermal growth factor receptor (*EGFR*) mutations, and the disease of patients with a rare *EGFR* mutation did not respond to first-generation tyrosine kinase inhibitors (TKIs), except for a single patient harboring the mutation p.G874D. In contrast, the disease of all patients with compound mutations responded to TKIs. After assessing data from database and literature searches, we found that clinical relevance for rare and compound *EGFR* mutations remains limited.

363 PD-L1 Expression of Lung Cancer Cells, Unlike Infiltrating Immune Cells, Is Stable and Unaffected by Therapy During Brain Metastasis

Vanda Téglási, Orsolya Pipek, Rita Lózsa, Kinga Berta, Dávid Szüts, Tünde Harkó, Pál Vadász, Livia Rojkó, Balázs Döme, Attila G. Bagó, József Tímár, Judit Moldvay, Zoltán Szállási, Lilla Reiniger

Patient selection criteria for immune checkpoint inhibitor therapy is still debated. We compared the immune cell infiltration and programmed cell death 1 (PD-1)/programmed death ligand 1 (PD-L1) expression of primary lung adenocarcinoma with their corresponding brain metastasis and found a strong correlation of PD-L1—positive tumor cells not influenced by oncotherapies. PD-L1 positivity in the primary tumor could serve as a therapeutic criterion even for brain metastases.

370 Patient-reported Outcomes After the Treatment of Early Stage Non—small-cell Lung Cancer With Stereotactic Body Radiotherapy Compared With Surgery

Leonie Alberts, Henri B. Wolff, Elisabeth A. Kastelij, Frank J. Lagerwaard, Frederik N. Hofman, Sherif Y. El Sharouni, Franz M.N.H. Schramel, Veerle M.H. Coupe

Quality of life is an important factor in deciding between stereotactic body radiotherapy and surgery when the expected difference in survival benefit is very small. This Dutch direct comparison of 41 patients treated with stereotactic body radiotherapy and 41 with surgery, revealed no clinical significant differences in quality of life the first year after treatment.

378 Thoracotomy and VATS Surgery in Local Non—Small-Cell Lung Cancer: Differences in Long-Term Health-Related Quality Of Life

Ville Rauma, Saana Andersson, Eric M. Robinson, Jari V. Räsänen, Harri Sintonen, Jarmo A. Salo, Ilkka K. Ilonen

Very long-term health-related quality of life (HRQoL) is an important end point in operated early stage non—small-cell lung cancer with good prognosis. The results for very long-term HRQoL after minimally invasive video-assisted thoracoscopic surgery (VATS) has not been evaluated and compared to thoracotomy. Surprisingly, inferior overall HRQoL was evident for patients operated with VATS, independent of preoperative factors including age, comorbidities, and pulmonary function tests.

384 Early Detection of Recurrence in Patients With Locally Advanced Non—Small-Cell Lung Cancer via Circulating Tumor Cell Analysis

Chimbu Chinniah, Louise Aguarin, Phillip Cheng, Cristina Decesaris, Alicia Cutillo, Abigail T. Berman, Melissa Frick, Abigail Doucette, Keith A. Cengel, William Levin, Stephen Hahn, Jay F. Dorsey, Charles B. Simone, II, Gary D. Kao

We investigated the potential usefulness of sequential circulating tumor cell (CTC) analysis for patients treated for locally advanced non—small-cell lung cancer (LA-NSCLC). We found that a CTC level increase gave median and mean lead time notice of progression of disease of approximately 6 months ahead of radiographic evidence. This telomerase-based CTC assay might thus complement conventional imaging for post-treatment monitoring of patients with LA-NSCLC.

391 Adjuvant Chemotherapy Increases Programmed Death-Ligand 1 (PD-L1) Expression in Non—small Cell Lung Cancer Recurrence

Max Lacour, Stefanie Hiltbrunner, Seok-Yun Lee, Alex Soltermann, Elisabeth Jane Rushing, Davide Soldini, Walter Weder, Alessandra Curioni-Fontecedro

We sought to determine the effect of chemotherapy on programmed death-ligand 1 (PD-L1) expression in non—small-cell lung cancer and variability upon PD-L1 expression on initial tumor and recurrence. Our results suggest that chemotherapy might increase PD-L1 expression and demonstrate variability from primary tumor to recurrence.

397 Postoperative Recurrence and Survival After Segmentectomy for Clinical Stage 0 or IA Lung Cancer

Atsushi Kamigaichi, Yasuhiro Tsutani, Makoto Fujiwara, Takahiro Mimae, Yoshihiro Miyata, Morihito Okada

The present study aimed to elucidate recurrence patterns and identify predictors of time to recurrence after intentional segmentectomy for early stage lung cancer. Two of 166 patients developed local recurrences, and consolidation to maximum tumor diameter ratio was an independent predictive factor for time to recurrence. Favorable survival is expected after intentional segmentectomy, and higher consolidation to maximum tumor diameter ratio increases the risk of recurrence.

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e535 A Rare Fusion of *CLIP1* and *ALK* in a Case of Non–Small-Cell Lung Cancer With Neuroendocrine Features

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e560 Acquired Hemophilia A After Nivolumab Therapy in a Patient With Metastatic Squamous Cell Carcinoma of the Lung Successfully Managed With Rituximab

Hamza N. Gokozan, Judah D. Friedman, Alvin H. Schmaier, Katharine A. Downes, Lisa A. Farah, Hollie M. Reeves

e564 Shorter Survival in Malignant Pleural Mesothelioma Patients With High PD-L1 Expression Associated With Sarcomatoid or Biphasic Histology Subtype: A Series of 214 Cases From the Bio-MAPS Cohort

Solenn Brosseau, Claire Danel, Arnaud Scherpereel, Julien Mazières, Sylvie Lantuejoul, Jacques Margery, Laurent Greillier, Clarisse Audigier-Valette, Valérie Gounant, Martine Antoine, Denis Moro-Sibilot, Isabelle Rouquette, Olivier Molinier, Romain Corre, Isabelle Monnet, Alexandra Langlais, Franck Morin, Emmanuel Bergot, Gérard Zalcman, Guénaëlle Levallet

In an analysis of programmed death ligand 1 (PD-L1) antigen expression from the phase 3 MAPS trial, PD-L1 expression was higher in sarcomatoid and biphasic malignant pleural mesothelioma (MPM) cells than in epithelioid subtypes, negatively affecting patient outcome, though not independently. In the epithelioid subset, PD-L1 strong expression significantly and independently affected progression-free survival. PD-L1 staining failed to show a prognostic role in the whole population of MPM patients, but PD-L1 high expression could affect survival in the epithelioid subtype.

e576 Outcome Differences Between First- and Second-generation EGFR Inhibitors in Advanced *EGFR* Mutated NSCLC in a Large Population-based Cohort

Sally C. Lau, Negar Chooback, Cheryl Ho, Barbara Melosky

A review of patients with advanced non–small-cell lung cancer with *EGFR* activating mutations was conducted to investigate outcomes with different front-line tyrosine kinase inhibitors using a large population-based cohort. The survival benefits of a second-generation tyrosine kinase inhibitor appear generalizable to a real-world patients.

e584 Tumor Spread Through Air Spaces Is a Survival Predictor in Non–Small-Cell Lung Cancer

Shuai Wang, Jiatao Hao, Cheng Qian, Hao Wang

Tumor spread through air spaces (STAS) is associated with poor survival of non–small-cell lung cancer (NSCLC). The histology type, Tumor, Node, Metastases stage, and region did not alter prognostic value of STAS. STAS is associated with clinicopathologically aggressive features in NSCLC.