conferenceseries.com

Virtual Meet on MEDICAL ONCOLOGY AND TUMOUR CELLS

July 28, 2021 | Webinar

Clinical value of egfr copy number gain determined by amplicon-based targeted next generation sequencing in egfr mutated nsclc patients

Pei Meng[2,5,+], Jiacong Wei[1,4,+], Miente Martijn Terpstra[1], Anke van Rijk[2], Menno Tamminga[3], Frank Scherpen[2], Arja ter Elst[2], Mohamed Z. Alimohamed[1,9], Lennart F. Johansson[1], Jos Stigt[6], Rolof P.G. Gijtenbeek[7], John van Putten[8], T. Jeroen N. Hiltermann[3], Harry J.M. Groen[3], Klaas Kok[1], Anthonie J. van der Wekken[3], Anke van den Berg[2*]

[1]*Department of Genetics, University of Groningen, University Medical Center Groningen, Netherlands*
[2]*Department of Pathology and Medical Biology, University of Groningen, University Medical Center Groningen, Netherlands*
[3]*Department of Pulmonary Diseases, University of Groningen, University Medical Center Groningen, Netherlands*
[4]*Department of Pathology, Cancer Hospital Chinese Academy of Medical Sciences, Beijing, China*
[5]*Department of Pathology, Collaborative and Creative Centre, Shantou University Medical College, Shantou, Guangdong, China*
[6]*Department of Pulmonary Diseases, Isala Clinic, Zwolle, Netherlands*
[7]*Department of Pulmonary Diseases, Medical Center Leeuwarden, Leeuwarden, Netherlands*
[8]*Department of Pulmonary Diseases, Martini Hospital, Groningen, Netherlands*
[9]*Department of Haematology and Blood Transfusion, Muhimbili University of Health and Allied Sciences, Dar-es-Salaam, Tanzania*
[+]*Authors contributed equally*

Background The clinical relevance of EGFR copy number gain in patients with EGFR mutated advanced non-small cell lung cancer (NSCLC) on first-line tyrosine kinase inhibitor (TKI) treatment has not been fully elucidated.
Objective We aimed to estimate EGFR copy number gain using amplicon-based next generation sequencing (NGS) data and explored its prognostic value.
Patients and Methods NGS data were obtained for 1566 NSCLC patients. EGFR copy number gain was defined based on an increase in EGFR read counts relative to internal reference amplicons and normal controls in combination with a modified z score ≥3.5. Clinical follow-up data were available for 60 patients treated with first-line EGFR-TKI.
Results Specificity and sensitivity of NGS-based EGFR copy number estimations were above 90%. EGFR copy number gain was observed in 27.9% of EGFR mutant cases and in 7.4% of the EGFR wild type cases. EGFR gain was not associated with progression free survival but showed a significant effect on overall survival with a adjusted hazard ratio (HR) of 3.14 (95% CI, 1.46-6.78, P=0.003). Besides EGFR copy number gain, osimertinib treatment in second or subsequent lines and presence of T790M at relapse revealed significant effects in a multivariate analysis with adjusted HR of 0.43 (95% CI, 0.20-0.91, P=0.028) and 0.24 (95% CI, 0.1-0.59, P=0.001), respectively.
Conclusions Pre-treatment EGFR copy number gain determined by amplicon-based NGS data predicts worse OS in EGFR mutated patients treated with first-line EGFR-TKI. T790M at relapse and subsequent treatment with osimertinib predict longer OS.

a.van.den.berg01@umcg.nl

p.meng@umcg.nl