Erlotonib analogues for the noninvasive identification of EGFR tyrosine kinase inhibitor-responsive non-small cell lung carcinoma tumors using positron emission tomography (Hadasit)

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Unmet Need:

- Activating mutations in the tyrosine kinase (TK) domain of the EGFR are detected in 10% to 30% of NSCLC patients, and evidence of their presence is a prerequisite for initiation of first-line therapy with selective TK inhibitors (TKIs), such as gefitinib and erlotinib.
- To date, the **selection of candidate patients for first-line treatment** with EGFR TKIs requires an **invasive tumor biopsy** to affirm the mutational status of the receptor (by genotyping or immunohistochemistry (IHC)).
    - This approach is invasive, requires time for mutation analysis and does not reflect the molecular characteristics of distant metastases.
    - Moreover, the majority of TKI-treated NSCLC patients ultimately develop resistance to treatment. Therefore, constant assessment of treatment efficacy is required throughout the course of treatment, to allow possible adjustments and modifications of the original therapeutic approach.
- Molecular imaging of the EGFR's mutational status in tumors using positron emission tomography (PET) could provide a **noninvasive method to select patients prior to TKI-therapy and to monitor the EGFR's mutational status during the course of treatment**

Innovation

- The development of Erlotonib analogues for the noninvasive identification of EGFR tyrosine kinase inhibitor-responsive non-small cell lung carcinoma tumors using positron emission tomography.

Competitive advantage

The use of a non-invasive and fast technique to select first line treatment with EGFR TKIs and follow-up on course of treatment.

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