Systematic Review And Meta-Analysis Of Real-World Effectiveness Of Osimertinib In Non-Small Cell Lung Cancer (NSCLC) With EGFR Mutation

By

Mais Nader Maghaireh

Supervisor

Dr. Nimer Alkhatib

Al-Zaytoonah University of Jordan, 2022

Abstract

Background: Osimertinib has been lunched in 2018 as an innovative tyrosine kinase inhibitor in the treatment of non-small cell lung cancer (NSCLC) that targets T790M mutations. The assessment of real-world effectiveness of osimertinib is lacking.

Aims: This study aims to evaluate the real-world effectiveness of osimertinib in NSCLC.

Methods: First, PubMed MEDLINE, Elsevier EMBASE, Cochrane Library and Google Scholar were systematically reviewed to collect real-world data on overall response rate, disease control rates, complete response, partial response, stable disease, progressive disease; comparative hazard ratios for overall survival and progression-free survival; and AEs grade ≥3. Second, meta-analyses were performed for quantitatively estimated outcomes.

Results: In this study, 6,564 patients were included. Osimertinib showed superiority in terms of overall response rate for the T790M+ population over the T790M-

population (Odd ratio 1.86; 95%CI=1.18, 2.95; p value of 0.008). These results were combined with superiority but not statistically significant OSHR and PFSHR for osimertinib over afatinib. The risk of AEs grade≥3 resulted from osimertinib is reasonable. The prevalence of the most common AEs grade ≥3 was QT prolongation and was less than 2 percent among the included study population.

Conclusions: In terms of overall response rate, osimertinib in NSCLC with T790M+ was associated with significantly superior effectiveness compared to osimertinib with T790M-. In general NSCLC population, osimertinib was reasonably safe and was associated with high rate of overall response, and disease control. However, osimertinib was non-statistically superior to afatinib in NSCLC patients with EGFR mutation in terms of OSHR and PFSHR, 0.89 (95%CI=0.43, 1.84) with p value of 0.75 and 0.75 (95%CI=0.54, 1.04) with p value of 0.08, respectively.