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

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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.

Objectives

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

Methods

PubMed MEDLINE, Elsevier EMBASE, Cochrane Library and Google Scholar were systematically reviewed to collect real-world data on the following outcome variables: Overall response rate (ORR), Disease control rates (DCR), Complete response (CR), Partial response (PR), Stable disease (SD), Progressive disease PD), Comparative hazard ratios for overall survival (OSHR) and progression-free survival (PFSHR), and AEs grade ≥3

A meta-analyses were performed for quantitatively estimated outcomes in single arm studies that assessed osimertinib and in two arms if osimertinib was compared to other alternatives.

Results

Search results: in this study, 47 observational studies with a total of 6,324 patients were included in the meta-analysis.

In single arm analysis: osimertinib showed ORR at 57.30% (95%CI=52.6%, 61.90%); DCR at 86.20% (95%CI=82.40%, 89.30%); CR at 2.80% (95%CI=2.00%, 3.90%); PR at 55.30% (95%CI=49.90%, 60.60%); SD at 27.7% (95%CI=24.10%, 31.60%); PD at 9.10% (95%CI=6.00%, 13.60%).

Comparative effectiveness: osimertinib showed significant superiority over afatinib in terms overall survival and progression-free survival in EGFR population; the OSHR was 0.60(95%CI=0.42, 0.86); the PFSHR was 0.70 (95%CI=0.53, 0.94).

Safety: the rate of occurrence of the most common AEs grade ≥3 was QT prolongation and was less than 2% among the included study population.

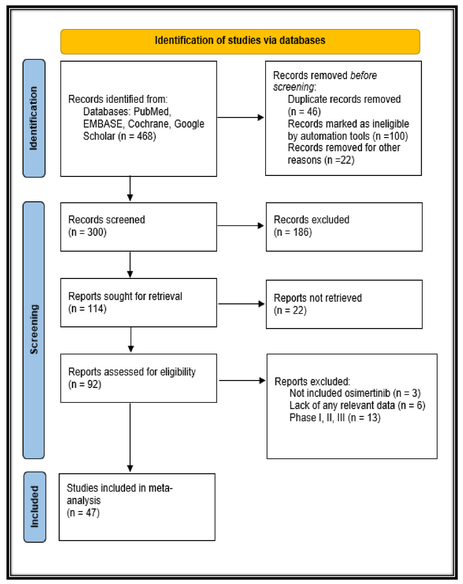

Figure 1. PRISMA flowchart

Outcomes	Proportion (95%CI)
ORR	57.30% (52.60%, 61.90%)
DCR	86.20% (82.40%, 89.30%)
CR	2.80% (2.00%, 3.90%)
PR	55.30% (49.90%, 60.60%)
SD	27.7% (24.10%, 31.6%)
PD	9.10% (6.00%, 13.60%)

Table 1. The results of single arm analysis of osimertinib

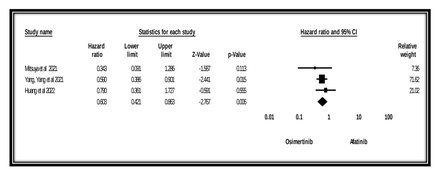

Figure 1. Forest plot of the comparative studies-based effectiveness of osimertinib versus afatinib in in terms of OSHR

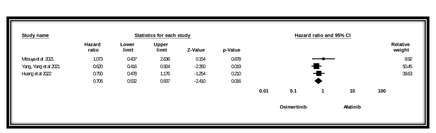

Figure 2 Forest plot of the comparative studies-based effectiveness of osimertinib versus afatinib in terms of PFSHR

Adverse events grade III/IV	Total	Rate
Sample size	**5026**	
QT prolongation	83	1.65%
Fatigue	62	1.23%
Diarrhea	55	1.09%
Decreased appetite	54	1.07%
Skin toxicity	49	1.00%

Table 2. Pooled estimates of adverse events grade ≥3

Conclusion

In general NSCLC population with EGFR mutation, osimertinib was reasonably effective and safe. In terms of OSHR and PFHR, osimertinib was statistically superior over afatinib in NSCLC patients with EGFR mutation.