Cost-Utility Analysis of Lorlatinib in First-Line Treatment of adult patients with ALK-Positive Advanced Non-Small Cell Lung Cancer (aNSCLC) in Colombia

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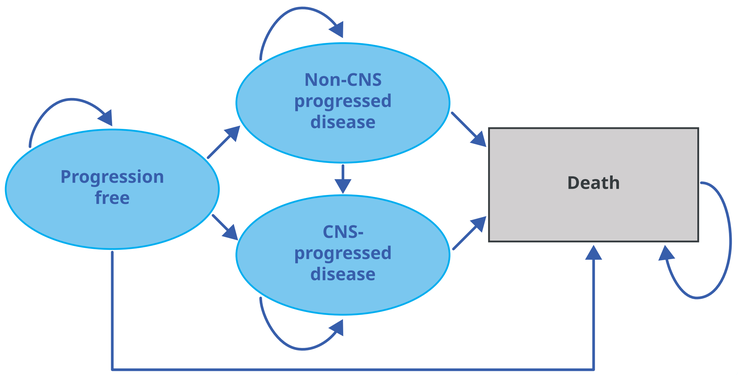
OBJECTIVE

- To evaluate the cost-utility of lorlatinib compared to the available ALK TKIs (alectinib, brigatinib, crizotinib) as first-line treatment option for adult patients with ALK+ aNSCLC from the Colombian healthcare system.

METHODS

- A partitioned survival Markov model with four health states was developed. The defined states included: progression-free, non-central nervous system (CNS) progressed disease, CNS-progressed disease, and death (Figure 1).

Figure 1. Model structure



- The time horizon for the model was set at 10 years with a 30-day cycle, a 5% annual discount rate, and the Colombian healthcare system perspective was adopted.
- Clinical, utility, and cost parameters required for the model were sourced from key clinical trials, published literature, national databases, and clinical experts. Prices were expressed in 2024 COP, and an exchange rate of 4,413.8 COP = 1USD was used[1].
- Due to the absence of head-to-head comparisons, an indirect comparison through a network meta-analysis was conducted to generate corresponding survival curves for lorlatinib against comparators, following Cope et al.[2]; Achana et al.[3]; and Guyot et al[4]. methods. Crizotinib was the common comparator[5-8].
- The cost-effectiveness threshold was set at three times the per-capita-gross-domestic-product (~20,500 USD), in line with national recommendations[9].
- Robustness checks were performed utilizing one-way sensitivity analysis (OWSA) and probabilistic sensitivity analysis (PSA).

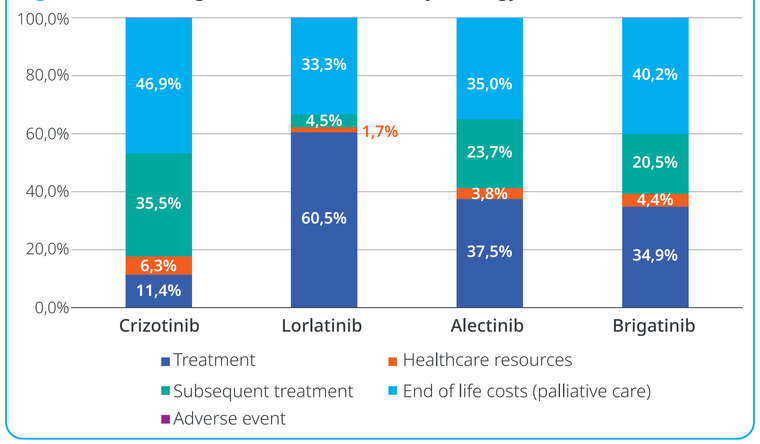
RESULTS

- Lorlatinib led to the highest number of quality adjusted life years with 4.87, followed by alectinib, brigatinib and crizotinib, with 4.18, 3.72 and 2.76, respectively.

RESULTS (cont)

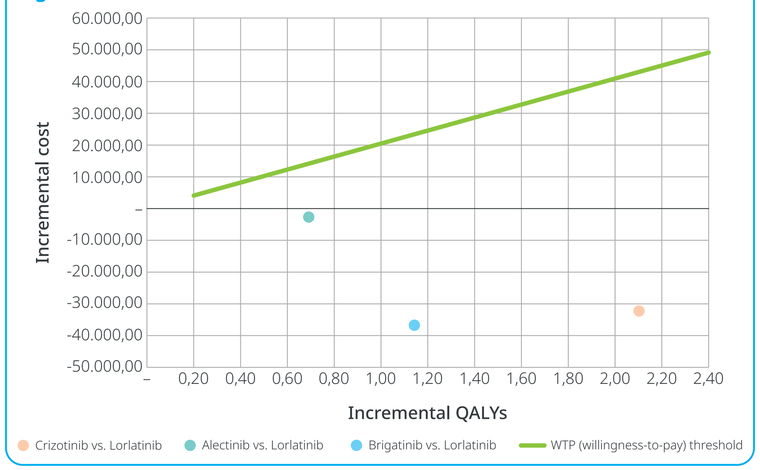
- In addition, lorlatinib occasioned the lowest cost ($497,653), followed by alectinib ($500,356), crizotinib ($529,949) and brigatinib ($534,388).
- Patients on the lorlatinib pathway presented the lowest end of life, subsequent treatment and healthcare resources (e.g. whole brain radiotherapy, follow-up visits, etc.) costs (Figure 2).
- No more than 0.1% of the costs were for managing adverse events, in the lorlatinib pathway they did not exceed 60 USD (Figure 2).

Figure 2. Percentage breakdown of costs by strategy



- Lorlatinib is a dominant strategy compared to the options available in the country. Loratinib savings per QALY compared to alectinib are about 2,703 USD, compared to crizotinib are 32,295 USD and compared to brigatinib are over 36 thousand USD (Figure 3).

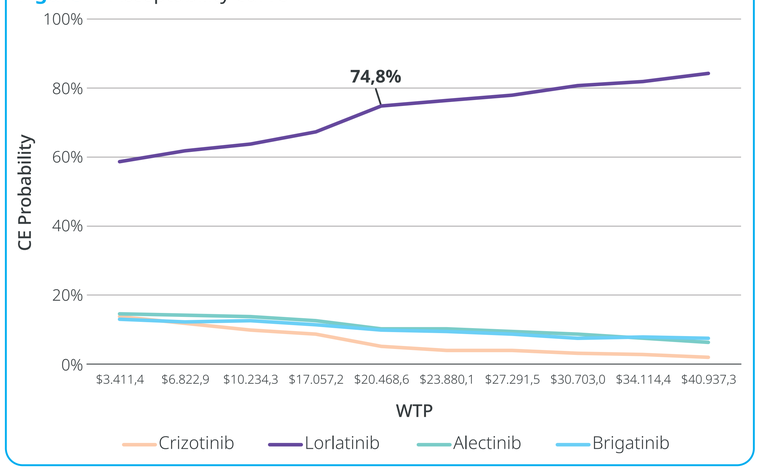
Figure 3. Cost-Effectiveness Plane



RESULTS (cont)

- The OWSA indicated that lorlatinib's price and comparators subsequent treatment costs were key parameters and the PSA showed that lorlatinib was the alternative with the highest probability of being cost-effective, with a probability of approximately 75% (Figure 4).

Figure 4. Acceptability curve



CONCLUSION

- In the Colombian health care system setting, lorlatinib is a cost-effective alternative against alectinib, brigatinib and crizotinib for the first-line treatment of adult patients ALK-positive aNSCLC.

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