Cost-Effectiveness Analysis of Abrocitinib Versus Dupilumab for Treatment of Moderate-to-Severe Atopic Dermatitis in Chinese Adults

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OBJECTIVES

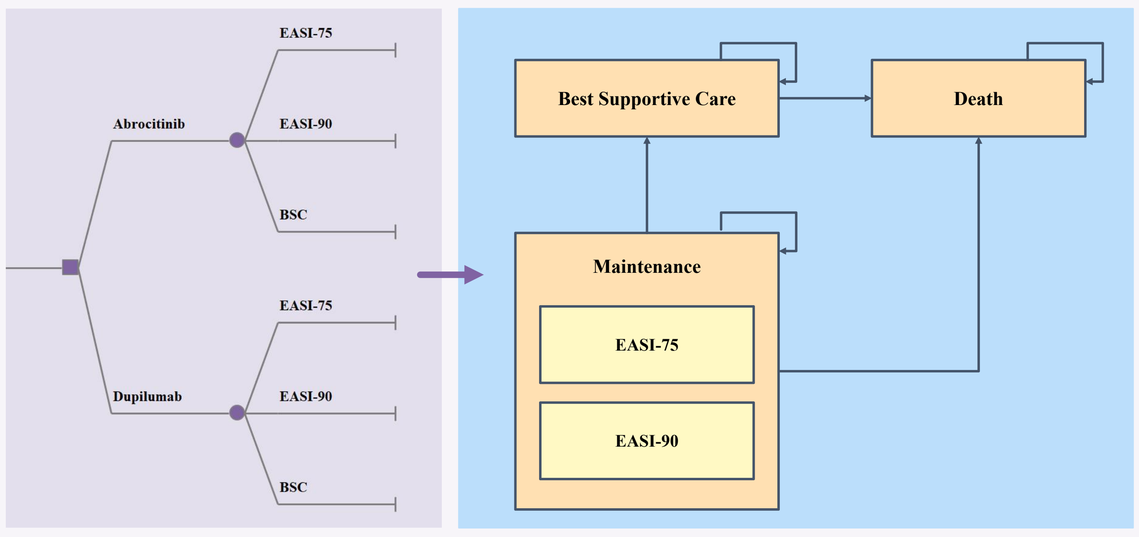
To evaluate cost-effectiveness of Abrocitinib versus Dupilumab for treating moderate-to-severe atopic dermatitis (AD) in Chinese adults from the societal perspective.

METHODS

Model Structure

- A decision tree and a three-state Markov model were incorporated into an economic model with induction and maintenance phases to estimate 5-year costs and quality-adjusted life-years (QALYs) for patients with moderate to severe atopic dermatitis.
- Patients with Eczema Area and Severity Index (EASI) scores ≥75 or EASI scores ≥90 were defined as the responders and stayed in the maintenance state.
- The overview of the model is illustrated in Figure 1.

Figure 1. Model structure



Model parameters

Clinical Data

- In the induction phase efficacy data are sourced from the JADE COMPARE[1] study.
- In the maintenance phase, the Jade regimen[2] study (52-week follow-up) and the Solo-continue[3] study (52-week follow-up), both of which included the Asian population, are selected for Abrocitinib and Dupilumab, respectively.
- The model assumed no increased mortality risk associated with atopic dermatitis compared to the general population.

Cost Data

- All reported costs were in local currency and adjusted to 2023 Chinese Yuan (¥) ($1 USD=¥7.31).
- Direct costs primarily include medication expenses, examination costs, outpatient costs, inpatient costs, and AEs management costs[4].
- Indirect cost is estimated based on the productivity loss and multiplied by the annual median wage and employment rate in the China[5].

Utility Data

- Utility values primarily originate from a report of the Institute for Clinical and Economic Review (ICER), including utility values for both moderate and severe disease severity levels of AD[6].
- Our study adjusted utility values for age among AD patients using UK study[7] data, as age tends to decrease the utility in healthy individuals.

RESULTS

Table 1. Basic result

		Abrocitinib	Dupilumab	Incremental
Moderate	Response years	1.77	1.18	0.59
	Cost (¥)	¥229,580.23	¥190,510.34	¥39,069.88
	QALYs	3.52	3.38	0.14
	ICER	¥275,625.67 /QALY		
Severe	Cost (¥)	¥267,248.20	¥236,881.47	¥30,366.73
	QALYs	3.15	2.92	0.23
	ICER	¥131,308.41 /QALY		

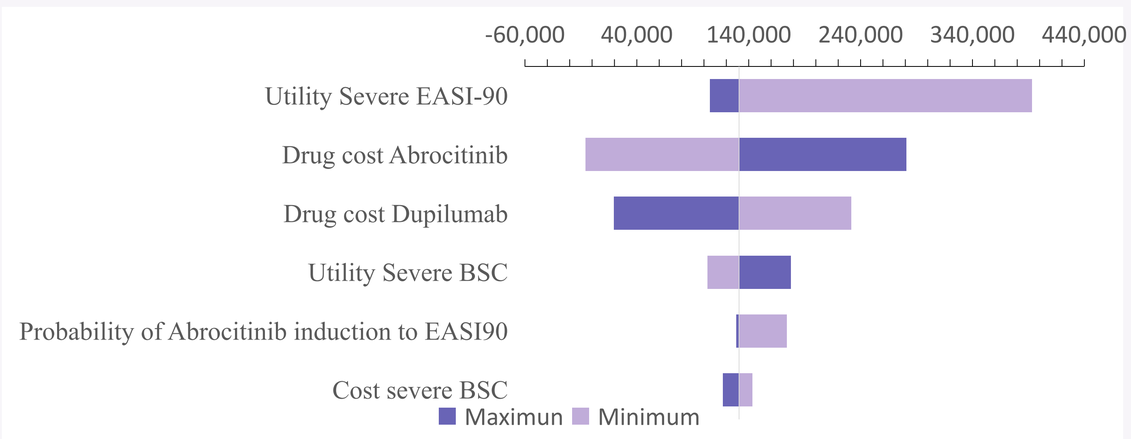
- Abrocitinib exhibited a higher number of response-years compared to Dupilumab over five years (1.77 vs. 1.18). (Table 1)
- For patients with moderate atopic dermatitis, compared to Dupilumab, Abrocitinib led to a gain of 0.14 QALYs at additional cost of ¥39,070, resulting in an ICER of ¥275,626 per QALY gained.
- For patients with severe atopic dermatitis, Abrocitinib showed an incremental gain of 0.23 QALYs at additional cost of ¥30,367, resulting in an ICER of ¥131,308/QALY.

Sensitivity Analysis

One-way Sensitivity Analysis

- Deterministic analyses indicated that the model outputs were most sensitive to the utility of EASI-90 state and drug prices. (Figure 2)

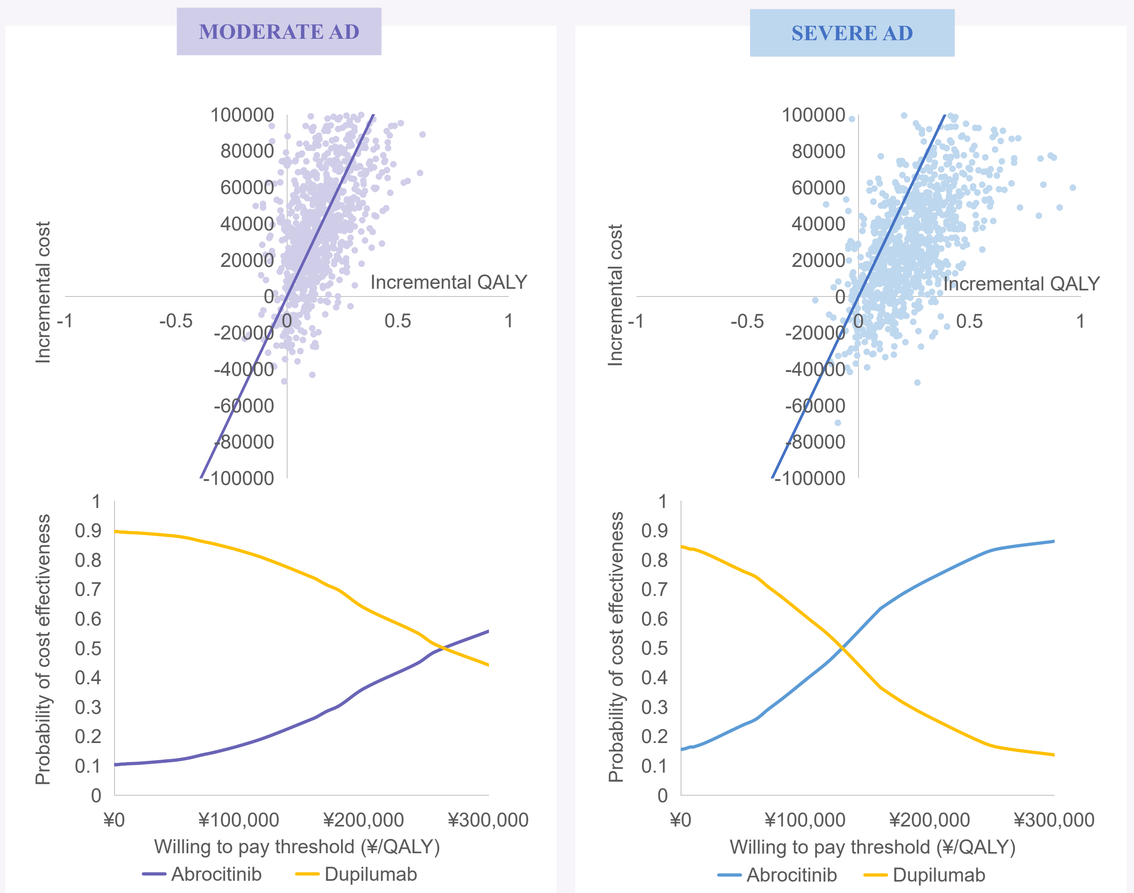
Figure 2. The tornado graphs



Probabilistic Sensitivity Analysis

- For all patients, the costs and QALYs were plotted in a cost-effectiveness plane as shown in Figure 3.
- At a willingness-to-pay threshold of ¥257,094/QALY (3 times of GDP-per-capita in China), Abrocitinib was more likely to be cost-effective for severe patients than moderate patients.

Figure 3. Scatterplot of incremental cost-incremental utility and cost-effectiveness acceptability curves



CONCLUSIONS

Abrocitinib offers more durable clinical efficacy and quality of life gains for patients with moderate-to-severe atopic dermatitis compared to Dupilumab in China and is considered cost-effective for severe patients.

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