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Comparing therapeutic effects of hematopoietic stem cell transplantation, tyrosine kinase inhibitors and chemotherapy for adult patients with Philadelphia chromosome-positive acute lymphoblastic leukemia: A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 May 2025 and was last updated on 7 May 2025.

INTRODUCTION

Review question / Objective This study aims to compare the clinical outcomes between HSCT and TKI-based chemotherapy regimens for Ph+ ALL by using a meta-analytic approach.

Condition being studied For Philadelphia chromosome-positive (Ph+) acute lymphoblastic leukemia (ALL) patients, both hematopoietic stem cell transplantation (HSCT) and tyrosine kinase inhibitor (TKI)-combined chemotherapy have demonstrated therapeutic efficacy.

METHODS

Search strategy "Philadelphia chromosomepositive acute lymphoblastic leukemia" [MeSH]. **Participant or population** The population was patients with Ph+ ALL diagnosed by cytogenetics/ molecular biology.

Intervention HSCT group.

Comparator TKIs combined with intensive chemotherapy.

Study designs to be included Prospective or retrospective controlled studies.

Eligibility criteria The population was patients with Ph+ ALL diagnosed by cytogenetics/ molecular biology; the intervention was HSCT group or TKIs combined with intensive chemotherapy; the outcome measures included overall survival (OS), disease-free survival (DFS), and relapse incidence; the study types included prospective or retrospective controlled studies.

Information sources PubMed, Embase, and the Cochrane Library.

Main outcome(s) The outcome measures included overall survival (OS), disease-free survival (DFS), and relapse incidence.

Quality assessment / Risk of bias analysis The methodological quality of the studies was evaluated using the Newcastle-Ottawa Scale (NOS).

Strategy of data synthesis The treatment effects on OS and DFS were expressed as hazard ratios (HRs) with 95% confidence intervals (Cls), whereas relapse incidence were analyzed using odds ratios (ORs) with 95% Cls. All meta-analyses employed the DerSimonian-Laird random-effects model to account for anticipated clinical heterogeneity across studies.

Subgroup analysis Prespecified subgroup analyses were stratified by study design, country, intervention, and study quality.

Sensitivity analysis To evaluate result robustness, we conducted leave-one-out sensitivity analyses using iterative exclusion of individual studies, complemented by Baujat plots to identify influential outliers.

Country(ies) involved China.

Keywords Philadelphia chromosome-positive; acute lymphoblastic leukemia; tyrosine kinase inhibitor; hematopoietic stem cell transplantation; meta-analysis.

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