INPLASY PROTOCOL

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The authors have no conflicts of interest to disclose.

Feasibility of sentinel lymph node biopsy in breast cancer patients with positive axillary nodes at initial diagnosis after neoadjuvant chemotherapy: An updated meta-analysis involving 3,450 patients

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Review question / Objective: **The purpose was to conduct a systematic review and meta-analysis of the feasibility of sentinel lymph node biopsy in breast cancer patients with positive axillary nodes at initial diagnosis after neoadjuvant chemotherapy. The essential outcomes of this study were the identification rate and false negative rate of sentinel lymph node biopsy following axillary lymph node dissection.**
Condition being studied: **The inclusion criteria for this study were: breast cancer patients diagnosed with metastasis of the axillary lymph node by physical examination or ultrasonic image, with or without fine needle aspiration or core needle biopsy; patients scheduled to receive neoadjuvant chemotherapy; and patients undergoing sentinel lymph node biopsy after neoadjuvant chemotherapy, followed by axillary lymph node dissection. Studies that met the following criteria were excluded: initial nodal disease was not verified by pathological confirmation; node-negative disease before neoadjuvant chemotherapy; sentinel lymph node biopsy carried out before neoadjuvant chemotherapy; and axillary lymph node dissection not performed after sentinel lymph node biopsy; enrolling fewer than ten patients.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 November 2020 and was last updated on 05 November 2020 (registration number INPLASY2020110019).

INTRODUCTION

Review question / Objective: **The purpose was to conduct a systematic review and meta-analysis of the feasibility of sentinel lymph node biopsy in breast cancer patients with positive axillary nodes at initial diagnosis after neoadjuvant chemotherapy. The essential outcomes of this study were the identification rate and**

false negative rate of sentinel lymph node biopsy following axillary lymph node dissection.

Rationale: Neoadjuvant chemotherapy for breast cancer has the potential to achieve a pathological complete response in up to 40% of patients, converting disease that was initially positive axillary nodes to negative axillary nodes. This has raised the question of whether sentinel lymph node biopsy could be an alternative to axillary lymph node dissection in these patients.

Condition being studied: The inclusion criteria for this study were: breast cancer patients diagnosed with metastasis of the axillary lymph node by physical examination or ultrasonic image, with or without fine needle aspiration or core needle biopsy; patients scheduled to receive neoadjuvant chemotherapy; and patients undergoing sentinel lymph node biopsy after neoadjuvant chemotherapy, followed by axillary lymph node dissection. Studies that met the following criteria were excluded: initial nodal disease was not verified by pathological confirmation; node-negative disease before neoadjuvant chemotherapy; sentinel lymph node biopsy carried out before neoadjuvant chemotherapy; and axillary lymph node dissection not performed after sentinel lymph node biopsy; enrolling fewer than ten patients.

METHODS

Participant or population: breast cancer patients with positive axillary nodes at initial diagnosis after neoadjuvant chemotherapy.

Intervention: Sentinel lymph node biopsy.

Comparator: Before and after self-control study.

Study designs to be included: No restriction - sentinel lymph node biopsy.

Eligibility criteria: The inclusion criteria for this study were: breast cancer patients diagnosed with metastasis of the axillary lymph node by physical examination or ultrasonic image, with or without fine needle aspiration or core needle biopsy; patients scheduled to receive neoadjuvant chemotherapy; and patients undergoing sentinel lymph node biopsy after neoadjuvant chemotherapy, followed by axillary lymph node dissection. Studies that met the following criteria were excluded: initial nodal disease was not verified by pathological confirmation; node-negative disease before neoadjuvant chemotherapy; sentinel lymph node biopsy carried out before neoadjuvant chemotherapy; and axillary lymph node dissection not performed after sentinel lymph node biopsy; enrolling fewer than ten patients.

Information sources: We systematically searched the PubMed, Cochrane, Embase, and Web of Science databases for full-text articles published until October 2020. We searched for additional references by scrutinizing relevant review articles and meta-analyses.

Main outcome(s): The main outcomes of this study were the identification rate and false negative rate of sentinel lymph node biopsy following axillary lymph node dissection.

Quality assessment / Risk of bias analysis: Two researchers independently carry out the literature quality evaluation, using the Review manager 5.3 software risk assessment tool, according to the QUADAS-2 system and decide through discussion or consultation with a third party when opinions are inconsistent. This meta-analysis is performed based on the related items of the Preferred Reporting Items for Systematic Reviews and Meta-analysis statement (PRISMA statement).

Strategy of data synthesis: Stata 15.0 was used to analyze the data. RR (95%CI) was used as the binary variable, and SMD (95%CI) combined effect size was used as the continuous variable. I2 is used to evaluate heterogeneity. If the heterogeneity test is P≥0.1 and I2≤50%, it indicates that there is homogeneity between studies, and the fixed effects model is used for combined analysis; if P50%, it indicates

that the study If there is heterogeneity, use sensitivity analysis or subgroup analysis to find the source of heterogeneity. If the heterogeneity is still large, use the random effects model or give up the combination of results and use descriptive analysis. Funnel plot was used to analyze publication bias.

Subgroup analysis: When literature reported that sentinel lymph node biopsy performance was associated with some factors (e.g. different molecular subtypes), the diagnostic performance will be investigated according to such factors.

Sensibility analysis: Sensitivity analysis was carried out by STATA 15.0 to test the stability of the meta-analysis results.

Country(ies) involved: China.

Keywords: sentinel lymph node biopsy; neoadjuvant chemotherapy; breast cancer; meta analysis.

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