INPLASY

Determinants of Stroke Following Percutaneous Coronary Intervention in Patients with Acute Coronary Syndrome: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

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 25 January 2025 and was last updated on 25 January 2025.

INTRODUCTION

*R*eview question / Objective This study aimed to investigate the factors contributing to stroke occurrence post-PCI in ACS patients.

Rationale Evidence on stroke occurrence following PCI remains limited. Previous studies have reported the risk of post-PCI stroke, for both ischemic and hemorrhagic subtypes, ranged from 0.2% to 0.5%. Incidence rates between 0.1% and 0.6% have been documented in single-center studies and national registry data. While rates of major adverse cardiovascular events (MACE) and mortality following PCI have significantly declined over the past two decades, the variability in stroke incidence post-PCI has not been fully elucidated. Currently, no systematic review has thoroughly investigated the incidence of stroke following PCI in patients with ACS. To address this gap, we performed a systematic review and meta-analysis to estimate the incidence and identify the factors contributing to stroke occurrence after PCI in this population.

Condition being studied P: Patients with Acute Coronary Syndrome (ACS); I: Percutaneous Coronary Intervention (PCI); C: Non-PCI; O: Stroke.

METHODS

Search strategy We conducted comprehensive systematic searches to identify studies reporting the incidence of stroke in ACS patients undergoing PCI. The searches were performed in January 2024 using two databases: Ovid MEDLINE (In-Process & Other Non-Indexed Citations and Ovid MEDLINE 1946 to Present) and Ovid EMBASE (1974 to Present). The search strategy incorporated a range of concepts targeting articles related to "acute coronary syndrome," "percutaneous coronary intervention," and "stroke."

Participant or population ACS patients who had undergone PCI and subsequently experienced a stroke.

Intervention PCI.

Comparator Non-PCI.

Study designs to be included Studies were included if they were observational cohort, case-control, or cross-sectional studies, or randomized controlled trials (RCTs).

Eligibility criteria Studies were included if they were observational cohort, case-control, or cross-sectional studies, or randomized controlled trials (RCTs) published in full-text English, focusing on ACS patients who had undergone PCI and subsequently experienced a stroke.

Information sources The searches were performed in January 2024 using two databases: Ovid MEDLINE (In-Process & Other Non-Indexed Citations and Ovid MEDLINE 1946 to Present) and Ovid EMBASE (1974 to Present).

Main outcome(s) Hemorrhagic or ischemic stroke.

Additional outcome(s) None.

Data management Database searches and deduplication were conducted. Preliminary review screened the retrieved records for potential inclusion. Subsequently, a second independent screening of titles and abstracts was performed using the Rayyan – Intelligent Systematic Review platform (https://rayyan.ai). Data were managed using Microsoft Excel.

Quality assessment / Risk of bias analysis The quality of included observational studies was assessed using the Newcastle-Ottawa Scale, while RCTs were evaluated using the Risk of Bias (RoB) tool in Review Manager (RevMan ver. 5.4 for Mac).

Strategy of data synthesis Data were reported as n (%), mean ± SD, or median (Q1–Q3). Pooled event rates for stroke, along with their 95% confidence intervals (CIs), were calculated. Meta-analyses were performed using a random-effects model across the included studies. Relative risk (RR) estimates for dichotomous variables and mean differences (MD) for continuous variables, along with their respective 95% CIs, were synthesized to examine the association between the identified determinants and the incidence of stroke following PCI in ACS patients. Heterogeneity among studies was evaluated using the Chi-squared test and quantified using the I^2 statistic. The I^2 values, ranging from 0% to 100%, were categorized as follows: low heterogeneity (I^2 50%).

Subgroup analysis None.

Sensitivity analysis None.

Language restriction English only.

Country(ies) involved Indonesia Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Hasanuddin, Makassar 90245, Indonesia.

Other relevant information None

Keywords Acute Coronary Syndrome, Ischemic Stroke, Hemorrhagic Stroke, Percutaneous Coronary Intervention, Systematic Review, Meta-analysis.

Dissemination plans Social media.

Contributions of each author
Author 1 - Andriany Qanitha - AQ conceived the idea and formulated the review questions, conducted the systematic literature search, screened titles and abstracts, assessed full-text papers, and extracted data, performed the data analysis. AQ drafted the initial manuscript, and prepared the final version for submission.
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