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Track: 05.00 - RISK FACTORS AND PREVENTION (PRIMARY AND SECONDARY)
Category: 05.03 - EPIDEMIOLOGY & RISK FACTORS

Title: INTRACRANIAL ARTERIAL CALCIFICATION AS A MARKER OF STROKE RISK AND WORSE STROKE OUTCOMES IN ADULTS: A SYSTEMATIC REVIEW AND METANALYSIS

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On behalf of:

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Background and Aims: Intracranial arterial calcification (ICAC) is common, but data on its impact on future stroke risk and outcomes remain limited. We conducted a systematic review and meta-analysis to investigate the association of ICAC with stroke risk and outcomes.

Methods: We searched three multidisciplinary databases from inception to July 2023. We selected studies that investigated incidence of stroke and its outcomes in patients with ICAC. We assessed the studies' risk of bias using the Newcastle Ottawa Quality Assessment Scale. Statistical analysis was conducted using Cochrane Review Manager (RevMan 5.4) [figure 1].

Results: After reviewing 584 citations, we selected 83 studies for full-text screening. We extracted data from a total of 20 studies, reporting outcomes on 14,599 patients. Overall, the risk of bias was low. The included studies were heterogenous, with varying outcomes assessed and differing measures of associations reported. ICAC was associated with an increased risk of ischaemic stroke, with a pooled odds ratio (OR) of 2.28 (95% Confidence Interval [CI]: 1.39-3.73), and one study reported a hazard ratio (HR) of 1.49 (95% CI: 1.24-1.78). ICAC also showed a trend towards increased mortality, with a pooled OR 1.40 (95% CI: 0.96-2.05) and high heterogeneity across the studies ($I^2 = 65\%$). The pooled HR per 1-standard deviation (1-SD) increase in ICAC was 1.25 (95% CI: 1.10-1.42), with low heterogeneity ($I^2 = 1\%$) between 2 studies reporting the HR [figure 2 and figure 3].

Conclusion: ICAC is significantly associated with an increased risk of stroke as well as a trend toward increased mortality (PROSPERO ID: CRD42023414813).

Figure 1: Flowchart showing the steps followed in the identification of the selected studies.

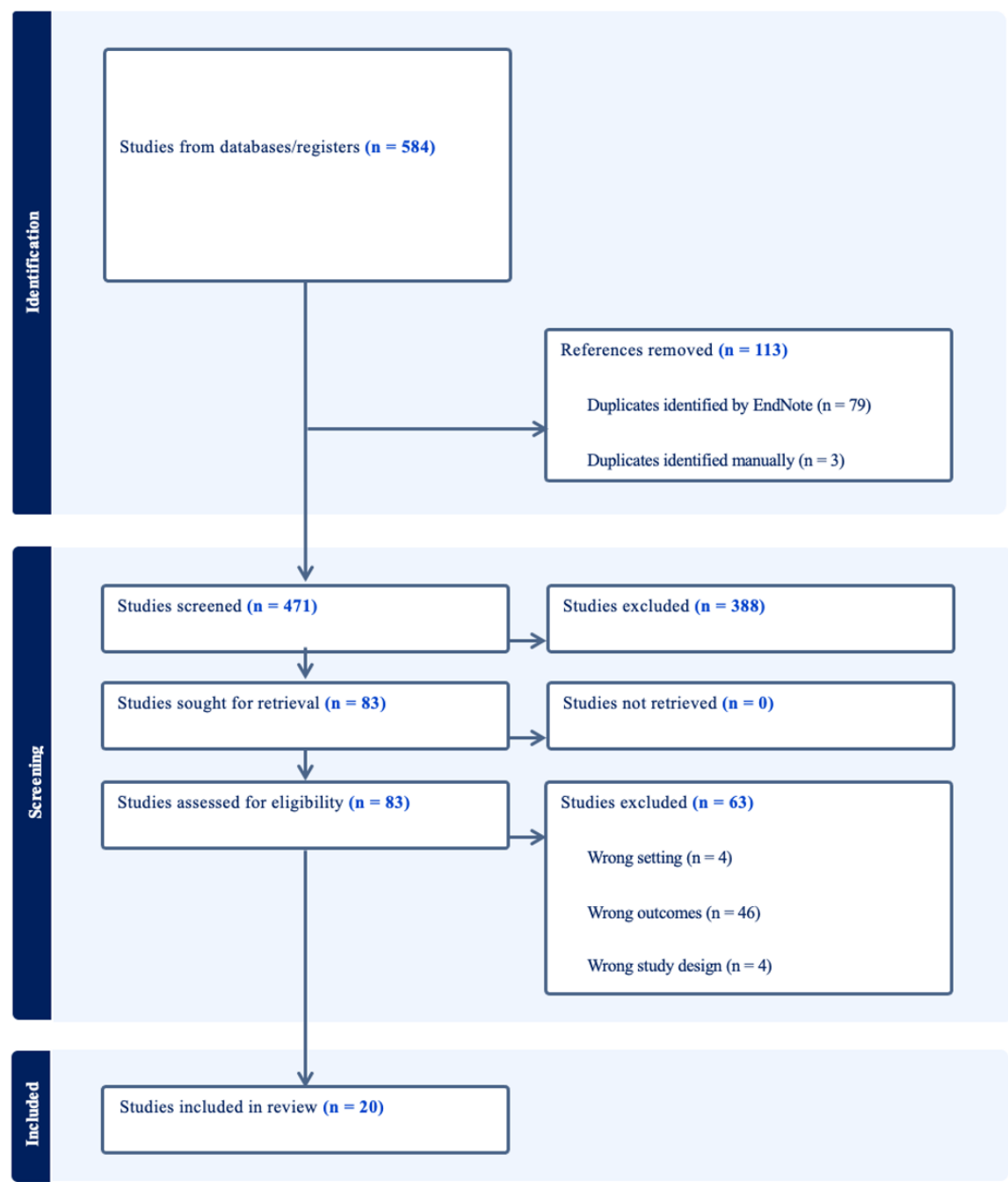


Figure 2: Forest plot of the meta-analysis of odd ratios and hazard ratios for the association between ICAC and ischaemic stroke.

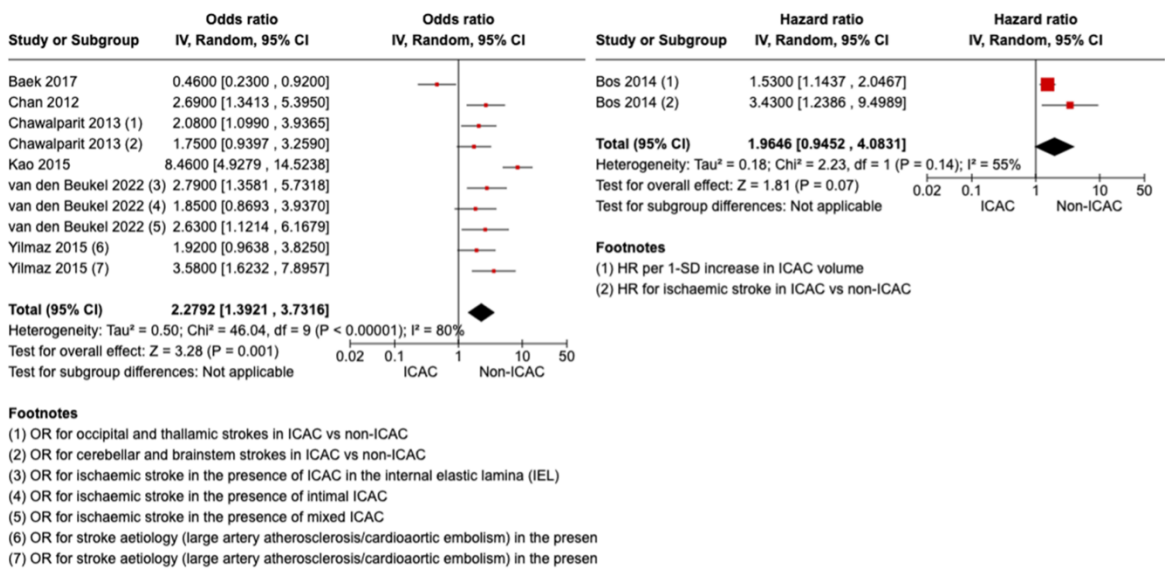


Figure 3: Forest plot of the meta-analysis of odd ratios and hazard ratios for the association between ICAC and mortality.

