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Angiotensin-receptor blockers (ARBs) and risk of Alzheimer's disease: a systematic review and meta-analysis

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Statement of the Problem: Antihypertensive medications may reduce the incidence of cognitive disorders. This may be due to reasons beyond their pure hypotensive effect and could be different between antihypertensive classes. In this regard, angiotensin-receptor blockers (ARBs) have attracted scientific interest. The aim of the present study was to conduct a systematic review and meta-analysis of the reported association between the use of ARBs and the incidence of Alzheimer's disease (AD).

Methodology: We systematically searched studies in PubMed, Cochrane Library and Google Scholar, since 1995 (date of approval of the first ARB by FDA) up to November 2018. We included randomized controlled trials (RCTs) or observational studies reporting the association between ARB use and incidence of AD in adults aged ≥ 18 years. The quality of studies was appraised according to the Newcastle-Ottawa Quality Assessment Scale (NOS).

Findings: Nine studies (1 RCT, 2 case-control studies and 6 cohort studies) met the inclusion criteria (total number of participants: 923,906; mean age 70.8 (range: 57.6-82.4) years; mean follow-up 7.5 (range: 4-20) years; mean NOS 7.4. When all studies were analyzed, ARB use was associated with a reduced risk of incident AD (HR 0.64, 95% CI 0.50-0.81, $p < 0.001$). In the 4 studies reporting a mean participants' age of ≥ 75 years ($n = 856,506$), the reduction in AD risk seemed greater (HR 0.52, 95% CI 0.34-0.80, $p < 0.001$); in the 4 studies where mean age was < 75 years ($n = 67,251$), the risk reduction did not seem significant (HR 0.76, 95% CI 0.48-1.21, $p = 0.250$). The risk reduction seemed greater in European studies ($n = 41,192$; HR 0.56, 95% CI 0.41-0.77, $p < 0.001$) than in American ($n = 821,712$; HR 0.52, 95% CI 0.26-1.01, $p = 0.054$) or Asian ($n = 61,002$; HR 0.74, 95% CI 0.43-1.28, $p = 0.285$) studies.

Conclusion & Significance: ARB use may reduce the risk of incident AD, especially in Europeans aged > 75 years. This association does not imply causation and further research is required to clarify potential mechanisms.

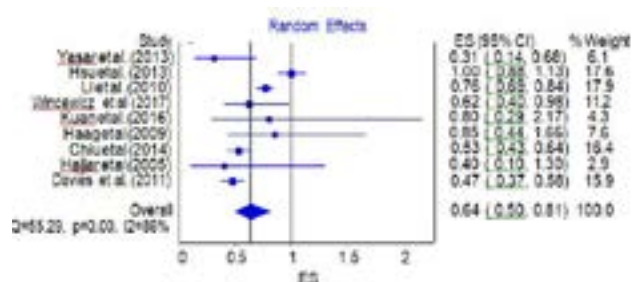


Figure 1: Forest plot of the risk of Alzheimer's disease with all angiotensin-receptor blockers (ARBs) use. Data type: effect/CI; effect measure: risk ratio/hazard ratios (HRs); analysis model: random effect. ES: Effect size.

References:

1. Larsson S C and Markus H S (2018) Does treating vascular risk factors prevent dementia and Alzheimer's disease? a systematic review and meta-analysis. Journal of Alzheimer's Disease 64(2):657-668.
2. Stang A (2010) Critical evaluation of the Newcastle-Ottawa scale for the assessment of the quality of nonrandomized

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studies in meta- analyses. *European Journal of Epidemiology* 25: 603–5.

3. Hsu C Y, Huang C C, Chan W L, Huang P H, Chiang C H, Chen T J, Chung C M, Lin S J, Chen J W and Leu H B (2013) Angiotensin-receptor blockers and risk of Alzheimer's disease in hypertension population--a nationwide cohort study. *Circ J* 77(2):405-10
4. Li N C, Lee A, Whitmer R A, Kivipelto M, Lawler E, Kazis L E and Wolozin B (2010) Use of angiotensin receptor blockers and risk of dementia in a predominantly male population: prospective cohort analysis. *BMJ* 340:b5465
5. Davies N M, Kehoe P G, Ben-Shlomo Y and Martin R M (2011) Associations of anti-hypertensive treatments with Alzheimer's disease, vascular dementia, and other dementias. *J Alzheimers Dis.* 26(4):699-708.

Biography

Teodoro J Oscanoa PhD leads the Research Center of Drug Safety in The Faculty of Medicine at University of San Martin de Porres, Lima, Peru. He is the head of the Department of Internal Medicine at Hospital Almenara and Associate Professor of Pharmacology in Universidad Nacional Mayor de San Marcos in Lima. His research areas are Geriatric Pharmacology, Drug Safety and Pharmacogenetics.

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