Title: Carotid Intima-Media Thickness and Cardiovascular Risk Factors

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Acknowledgment: None
Financing: The Authors have no funding, financial relationships to disclose.
Conflict of interest statement by authors: The Authors have no conflicts of interest to disclose.
Compliance with ethical standards: Yes.

Authors Contribution Statement:

Contributor Role	Role Definition	Authors 1	2	3	4	5	6
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims.	X	X				
Data Curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse.	X	X				
Formal Analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.	X	X				
Funding Acquisition	Acquisition of the financial support for the project leading to this publication.						
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.	X	X				
Methodology	Development or design of methodology; creation of models	X					
Project Administration	Management and coordination responsibility for the research activity planning and execution.	X					
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.	X	X				
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.						
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.	X					
Validation	Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs.	X					
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.	X	X				
Writing – Original Draft Preparation	Creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).	X	X				
Writing – Review & Editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages.	X	X				

Manuscript word count: 500.
Number of Figures and Tables: 0.
Personal, Professional, and Institutional Social Network accounts.

- **Facebook:** No.
- **Twitter:** No.

Discussion Points:

1. Carotid artery morphology has a role in the evolution of atherosclerotic carotid artery disease (CAD).
2. There is an association between CAD and obesity, chronic kidney disease, and secondary hyperparathyroidism.
3. Small size for gestational age presents a significant relationship with the development of CAD.

4. The earlier the preventive measures are, the better the results for the health of the elderly people.
5. Further research is needed to validate preventive procedures initiating since the prenatal period.

THE LETTER.

To the Editor,

We read the review by Albers SS, et al. emphasizing the relationship between carotid artery morphology and the evolution of atherosclerotic carotid artery disease (CAD).[1] The authors commented on the anatomic changes developing since birth and increasing with aging, which play a significant role in the development of atherosclerotic CAD. Mainly, due to the interactions with well-known risk factors of atherosclerotic plaques including hypertension, dyslipidemia, diabetes mellitus, and smoking; they also focused on intra-individual differences in the extension of carotid involvement.[1] Their findings are useful in daily practice by indicating anatomical and demographic factors related to the CAD pathogenesis, and showing that people may have unilateral carotid changes when both arteries underwent actions of the same systemic risk factors.[1] Increases in internal carotid kinking, carotid bulb diameter, internal and common carotid tortuosity, and bifurcation angle are more frequent with aging. Even in absence of disease, these alterations can contribute in disturbances of the intramural elastin, but the threshold at which the changes cause or protect from atherosclerotic CAD is not clear.[1]

In this setting, evaluations of carotid intima-media thickness (CIMT) in people with obesity, chronic kidney disease (CKD), and hyperparathyroidism seem be appropriate.[2-4] For example, the comparison of CIMT in two groups (G1 and G2) of hemodialysis people with levels of parathormone (PTH) ≤ 200 pg/ml (G1), mean age: 46 ± 5 years) and above 500 pg/ml (G2), mean age: 48 ± 5 years). Patients had from 18 to 65 years and ultrasonography study in the middle third of right common carotids showed no significant enhanced thickness and calcified plaques (G1: 42.86%, G2: 71.43%). CIMT was correlated with PTH levels. Worthy of note, the time on dialysis made no difference between CIMT of the groups.[2] CIMT was studied in three groups of patients aged between 30 and 60 years: G1 obese with CKD; G2 non-obese with CKD; and G3 obese without CKD.[3] All groups had measurements of CIMT higher than normal, mainly in patients of G3 (control group of study), showing that arterial changes are more related with obesity.[3]

There is a general accordance about the adoption of the earliest as possible procedures to reach and maintain a low cardiovascular risk during the entire life course. The role of vascular remodeling and risk factors for cardiovascular disorders since conception to 2 years of life have also merit attention to allow the effective prevention.[4] Recent review with meta-analyses of 6,221 studies including 7,977 individuals assess for CIMT in ages from 0 to 18 years revealed risk factors in the first 1,000 days of life. Small size for gestational age was the most significant association with increased CIMT in childhood, which is related to disturbed blood flow and pressure and atherosclerosis. Although further research is needed to confirm the findings, preventive measures are justified, as eradicating gestational smoking and providing adequate maternal nutrition.[4]

Additional concern is on the relation of increased CIMT with stroke risk and vascular dementia development; with the growing population of the oldest older individuals, effective procedures should initiate since prenatal.[5] Guidelines for control cardiovascular risks highlight the cost-effectiveness of primary and secondary prevention of stroke and high blood pressure, associated conditions with atherosclerosis that play a role in the evolution of vascular and Alzheimer's dementia. The weight control since the earliest infancy would reduce future cerebrovascular disorders and the development of dementia, increasing the quality of life of the elderly.[5]

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