
Intracranial atherosclerosis

Intracranial atherosclerosis is one of the most important risk factors for ischemic stroke worldwide.

Intracranial carotid artery calcification volume may be used as a marker of intracranial atherosclerosis and can now be quantified semi-automatically on (non-) enhanced CT scans.



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Semi-automatic quantification of intracranial carotid artery calcification volume



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Intracranial atherosclerosis

Stroke is the second leading cause of death and one of the major causes of disability worldwide.

Intracranial atherosclerosis is the most important risk factor for ischemic stroke worldwide.¹ Yet, it has only gained interest recently.^{1,2}

Semi-automatic quantification of intracranial carotid artery calcification volume

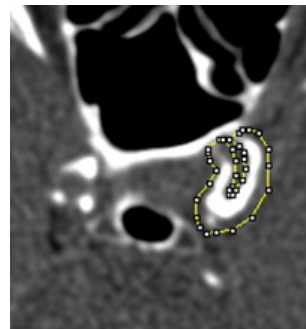
We have developed a semi-automatic tool that can be used to segment calcification in the intracranial carotid artery, and to quantify its volume on (non-)enhanced CT examinations.^{2,3}

The tool was developed as a plug-in for the commercially available ImageJ, version 1.46r (<http://imagej.nih.gov/ij/index.html>).

Quantification method



Subject scan



Manually segmented scan

	A	B	C
1	Subject	Epicardial fat volume	Remarks
2	1	123.8344345	
3	2	95.32437897	
4	3	111.1454239	
5	4	14.47992897	
6	5	97.33980056	
7	6	154.8377423	
8	7	106.4687958	
9	8	92.26269531	
10	9	142.3227637	
11	10	54.67374802	
12	11	36.02566147	
13	12	91.02566528	
14	13	50.63199234	
15	14	39.61423874	
16	15	46.19740295	
17	16	86.88087463	

Calcification volumes

Quantification method

- Semi automatic
- Validated by an expert reviewer panel

What do we offer?

We offer the tool (plugin) to perform quantification of the intracranial carotid artery calcification volume on (non-)enhanced CT examinations.

References

1. Arenillas JF. Intracranial atherosclerosis: current concepts. *Stroke*. 2011;42(1)(suppl):S20-S23
2. Bos D, et al. Intracranial carotid artery atherosclerosis: prevalence and risk factors in the general population. *Stroke*. 2012;43(7):1878-1884.
3. de Weert TT, et al. Intracranial internal carotid artery calcifications: association with vascular risk factors and ischemic cerebrovascular disease. *AJNR Am J Neuroradiol*. 2009;30:177-184.