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POSTER

Carotid stenosis grading: inter-observer agreement using CTA-NASCET

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Abstract

Background: Carotid artery stenosis is estimated to be responsible for approximately 10-15% of ischemic strokes. Patients with severe symptomatic stenosis benefit from revascularization therapy with endarterectomy or angioplasty and stenting. Revascularization is highly beneficial in patients with greater than 70% stenosis and may be beneficial in certain subgroups of patients with moderate stenosis of 50-69%. Measurement of internal carotid stenosis (ICA) to identify such patients can be made with computed tomography angiography (CTA) using the North American Symptomatic Carotid Endarterectomy Trial (NASCET) method.

Objectives: Evaluate the reproducibility of the NASCET method between observers in patients with different grades of carotid stenosis and the possible impact of such variability on referrals to revascularization.

Methods: Thirty-seven cervical ICA measurements were obtained from a group of randomly selected patients who presented with acute stroke at a tertiary care hospital. CTA images were obtained using a 64-slice scanner and ICA stenosis was assessed using the NASCET method. Three neuroradiologists performed blinded measurements of the internal carotid arteries. We assessed inter-observer variability using the Cohen's kappa coefficient and Bland-Altman plots.

Results: Significant agreement differences were found in the measurements obtained by the 3 observers. The kappa statistics (k<0,40) revealed a week-moderate inter-observer agreement. Correspondingly, differences were found in the categorisation of percentage of carotid stenosis, and correspondingly in which patients meet the criteria for referral to revascularization.

Final Considerations: These findings suggest that the inter-observer variability of carotid stenosis grading using the NASCET method is not neglectable. The week-moderate agreement found suggests that strategies to increase accuracy of carotid stenosis measurement and evaluation using complementary methods may be necessary for correct referral of patients for revascularization.

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