

Diagnostic Validity of Doppler Ultrasonography in Carotid Stenosis

Ibrahim Alnaami MD, MSc, FRCSC* Abdullah Aseeri MD** Adel Alhazzani MD, FRCPC, FAAN*** Ibrahim A. Alburaidi MD* Mona H. Alkhayri MD* Hani A. Dibssan MD* Mohammed S. Alqahtani MD**** Mohammed A. Alqahtani MD* Saleh M. Al-Qahtani MD* Shehata F. Shehata MBBCh, PhD***** Saeed A. Alqahtani MD, ABPN***** Ashraf Gaber MD, FEBR, ABR*****

ABSTRACT

Objective: The goal of the study is to appraise the diagnostic validity of carotid Doppler ultrasound in stroke patients.

Design: Retrospective

Setting: Aseer central Hospital, Abha, Saudi Arabia

Methods: A total of 77 stroke patients, admitted to Asir Central Hospital (ACH), Saudi Arabia, from January 2017 to December 2018 were enrolled. The degree of carotid artery stenosis was assessed by CT-angiography and carotid Doppler ultrasonography. The degree of stenosis was classified as: <70% or >70% and <50% or >50%. Considering CT-angiography the gold standard reference test, the diagnostic validity of carotid Doppler ultrasonography was calculated.

Results: The location of stenosis was in the internal carotid artery among 69% of patients, while in 19%, it involved both the common carotid and the internal carotid arteries. Doppler ultrasonography had a sensitivity of 100%, a specificity of 87.5%, a positive predictive value of 94.6%, a negative predictive value of 87.5%, and an overall accuracy of 96.1%, when considering cut-off point of 50% stenosis.

Conclusion: Carotid Doppler ultrasound offers high diagnostic validity among stroke patients. It is highly recommended for screening cases with symptoms of transient ischemic attacks or for differential diagnosis of stroke. However, since it is operator-dependent, continued training of radiographers and the use of enhanced technology are essential to improve its diagnostic validity.

Keywords: Stroke, Carotid artery stenosis, Carotid Doppler Ultrasonography, Diagnostic validity.

Bahrain Med Bull 2021; 43 (3): 567 - 570

* Division of Neurosurgery, Department of Surgery, College of Medicine, King Khalid University, Abha, Saudi Arabia. E-mail: ialnaami@gmail.com

**Department of Neurosurgery, Medical city, King Khalid University, Abha, Saudi Arabia

***Neurology Unit, Department of Medicine, College of Medicine, King Saud University, Riyadh, Saudi Arabia

****Neurology Unit, Department of Medicine, Armed Forces Hospital of Southern Region, Saudi Arabia

*****Department of Family and Community Medicine, College of Medicine, King Khalid University, Abha, Saudi Arabia

*****Division of Neurology, Department of Medicine, college of medicine, King Khalid University, Abha, Saudi Arabia

***** Department of Radiology, Aseer Central Hospital, Abha, Saudi Arabia