INTRODUCTION

Imaging of the carotid arteries is recommended as part of the diagnostic evaluation of a patient with ischemic stroke or TIA because patients with high grade carotid stenoses will benefit from carotid endarterectomy if used properly and may benefit from stenting for secondary prevention of ischemic stroke **. (*Josephson et al., 2004*)**

Stroke is the third leading cause of severe disability and death in the Western world, creating an enormous health economic burden on society. Extra cranial carotid atherosclerotic disease is well established as a major risk factor for cerebrovascular events, with increasing risk associated with increasing severity of stenoses. **(*Walker et al., 2002*)**

Differentiation between lipids, fibrous and calcified plaques, may be possible, especially with multislice scanning. Multislice CTA can in addition detect stenoses in the region of the carotid origin from the aorta, the carotid siphon, and the intracranial portion of the carotids. CT is able to provide a comprehensive evaluation of patients with acute stroke by using a combined approach of precontrast CT to detect hemorrhage and manifest infarction, CT brain perfusion measurements to differentiate between penumbra and infarct and CTA to detect the occluded vessel as well as potential concomitant carotid abnormalities. **(*Prokop et al., 2004*)**

CT angiography is a useful tool for evaluation of cerebrovascular vessels. New multi-detector row CT technology provides several advantages for carotid imaging in comparison with the single-detector technique***(Marja Berg et al., 2005)***

Although extracranial carotid artery stenosis is accepted as a significant risk factor for cerebrovascular events, certain patients with atherosclerotic disease may be at higher risk depending on the morphology of the plaque .(***Kiran R et al ., 2006*****)**

Computed tomographic (CT) angiography has been shown to correlate with Doppler US and DSA for the evaluation of carotid stenosis in carotid arteries that do not contain stents , the sensitivity and specificity of CT angiography have been reported to be as high as 90%. (***Darren B et al ., 2006)***

Atherosclerotic disease of the extracranial internal carotid arteries is a common treatable cause of symptomatic cerebral vascular disease. Currently, the decision to intervene, by using surgical or endovascular techniques, is based primarily on the percent luminal narrowing of the vessel. **(*De Groot E et al ., 2008)***

Computed tomography angiography (CTA) is a rapidly developing technology with great potential. This is particularly true for evaluating neurovascular disease. Clinical stroke because of atherosclerotic disease of the carotid and vertebral arteries is a common examination indication; areas of stenosis, and soft and calcified plaque along the entire vessel, not only at the carotid bifurcation, permit a full assessment of the patient's disease process. ***(David S. et al., 2007)***

3D Computed Tomographic Angiography (CTA) is a noninvasive volumetric imaging technique increasingly used for evaluation of vascular system. The introduction of Multidetector CT (MDCT) has increased scanning speed, allowing shorter acquisition time, greater volume coverage and decreased contrast requirement while diminishing respiratory motion artifacts. ***(Surg Cdr IK et al., 2005)***

Carotid plaque ulceration is an important risk factor for stroke, and its diagnosis may be very important to plan a correct therapeutic approach. We hypothesized that axial scans and various reconstruction methods could have different specificity and sensitivity in the study of plaque ulceration. The object of this study was to evaluate their role and diagnostic efficacy in patients with carotid plaque complicated by ulceration through the comparison with surgical results . (***L. Saba et al., 2007***)

In recent years, rapid advances in computed tomographic (CT) technology and image postprocessing software have been made. **CT angiography** was improved substantially by increasing scan speed and decreasing section thickness and emerged as a powerful tool in neurovascular imaging . ***(Michael M. Lell et al., 2006)***