Summary and Conclusion

Carotid artery stenosis is a common complication of atherosclerosis. The area of the carotid bifurcation is most commonly affected. Higher grades of carotid stenosis are associated with an increased risk of stroke. The stroke risk is also increased in patients with ulcerated plaques that facilitate formation of thromboemboli.

North American Symptomatic Carotid Endarterectomy Trial (NASCET) has proven that patient with severe stenosis (70-99%) benefit from carotid endarterectomy, therefore determination of the degree for stenosis is very important.

Catheter angiography is widely accepted as the gold standard for the demonstration of carotid artery disease. However, this technique is invasive, and expensive and has substantial risk.

The techniques of duplex Ultrasonography (US), MRA and CTA have the advantage of being non invasive. Each method has its advantages and disadvantages.

The advantages of spiral CT angiography for carotid artery investigation are the rapidity of examination, minimum patient discomfort, lower radiation doses, much less invasiveness, and lower costs compared with angiography. Furthermore, it provides information on the vessel lumen, vessel wall, and surrounding structures. It is also less operator-dependent diagnostic tool than duplex US. Compared to MRA, the lower cost, better availability and higher acquisition speed are important advantages.

Single and multislice CTA are excellent for detecting 70% to 90% carotid stenosis and had 100% accuracy in diagnosing total versus near occlusions. The differentiation between true total occlusion and hairline residual lumen is essential in the carotid endarterectomy. It is able to provide valuable information about plaque composition and may prove to be useful in detecting large ulcers in the carotid plaques.

It is advocated the routine addition of CTA of the neck to currently recommendations of CT imaging of the brain for patient with stroke and TIA. Thus alone or in conjunction with duplex sonography or MRA or both may reduce the need for preoperative carotid angiography.

The suspicion of vascular cervical injury requires prompt diagnostic evaluation. CT angiography has been shown to be a good noninvasive alternative to catheter angiography for the initial assessment. With the advent of multi–detector row CT and three-dimensional postprocessing workstations, images can be more accurately reproduced, similar to the familiar angiographic display.

CT angiography can promptly reveal common vascular injuries of the neck such as vessel occlusion, pseudoaneurysm, extravasation, intimal flap, and dissection. In addition, CT has the distinct advantage of providing valuable information regarding the vertebral column and spinal canal, the status of the airway, the extent of associated hematoma, and other soft tissues of the neck. In cases of penetrating gunshot injuries, the trajectory of the bullet and the locations of fragments can be assessed.

There are some drawbacks for CT angiography which should be considered; contrast load, ionizing radiation exposure, as well as time consuming 3D editing procedure.

In this work, we tried to high lighten the technical aspects of CTA, and its role in diagnosis and assessment of different extracranial carotid artery lesions.