Computed Tomography Angiography Indications

Acute ischemic stroke

CTA is useful for assessing the location and extent of vascular occlusion in acute ischemic stroke, [1].

Findings can direct treatment towards endovascular options when a proximal or significant large vessel occlusion is seen. To avoid delays in candidates for endovascular therapy, it is reasonable to proceed with CTA wihtout waiting for serum creatinine if there is no history of renal impairment (Level II [2]).

Spontaneous intracerebral hemorrhage

Few studies have examined the risk of computed tomography angiography (CTA) during the acute phase of spontaneous intracerebral hemorrhage (ICH), while the benefits of CTA in ICH have been well-documented. The study from Hotta et al., investigated both the benefits of identifying CT angiography spot sign.

Subarachnoid hemorrhage

see Computed tomography angiography for subarachnoid hemorrhage.

Brain death

see Computed tomography angiography for brain death.

Computed Tomography Angiography for intracranial aneurysm diagnosis

Computed Tomography Angiography for intracranial aneurysm diagnosis

Lower extremities

If patients presented with a weak or absent dorsalis pedis artery pulse, edema of both legs, and a past history related to vascular lesions of the lower limbs, they evaluated the veins and arteries of the lower extremities using Doppler sonography. If abnormal vascular findings were detected, computed tomography angiography (CTA) of the lower extremities was performed. Radiologic and clinical risk

factors of concomitant occlusive arterial lesions of the lower limb were analyzed by logistic regression analysis.

In 2013, 335 patients suspected of having vascular lesions underwent Doppler sonography. Among them, CTA of the lower extremities was performed in 58 patients. The mean age was 69.4 years (35 men and 23 women). Severe narrowing or total occlusion of the leg arteries was detected in 23 patients. Partial obstructive arterial disease of the legs was detected in 14 patients. Occlusion but with good collateral circulation of the leg was found in three patients. Surgical treatment plans were cancelled or changed in 28 patients. The risk factors for occlusive arterial lesions of the legs were an abnormal ankle-brachial pressure index (ABPI), absent dorsalis pedis artery pulse, and lack of response after a pain-blocking procedure.

If patients present with a weak or absent dorsalis pedis artery pulse, abnormal ABPI ratio, and no response after a pain-blocking procedure, the clinician should consider the possibility of severe arterial occlusion of the legs. They suggest that the differential diagnosis of obstructive arterial lesions of the legs from lumbar degenerative diseases is important to prevent unnecessary invasive surgical treatment of the lumbar spine [3)].

A study confirms that people with symptomatic LSS, neurogenic claudication, walking limitations and LSS-related disability are extremely sedentary, and are not meeting guidelines for physical activity. There is an urgent need for interventions aimed a reducing sedentary behaviour and increasing the overall level of physical activity in LSS, not only to improve function but also to prevent diseases of inactivity. This study suggests that reducing sedentary time, increasing time spent in light intensity activity, and increasing time spent in higher intensities of light activity may be appropriate as initial goals for exercise interventions in people with symptomatic LSS and neurogenic claudication, transitioning to moderate activity when appropriate. Results of this study also demonstrate the importance of employing disease specific measures for assessment of performance in LSS, and highlight the potential value of these methods for developing targeted and realistic goals for physical activity. Physical activity goals could be personalized using objective assessment of performance with accelerometry. This study is one step toward a personalized medicine approach for people with LSS, focusing on increasing physical function [4)].

Problems

Flat panel detector CT angiography with intravenous contrast agent injection (IV CTA) allows high-resolution imaging of cerebrovascular structures. Artifacts caused by metallic implants like platinum coils or clips lead to degradation of image quality and are a significant problem.

When an intravenous contrast protocol is used, metal artifact reduction (MAR) significantly ameliorates the assessability of brain parenchyma, vessels, and treated aneurysms in patients with intracranial coils or clips [5)].

1)
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2)
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Lee DC, Heo DH, Cho KS. Concomitant Occlusive Vascular Lesions of Legs in Patients with Degenerative Lumbar Diseases: Do These Lesions Influence Treatment? J Neurol Surg A Cent Eur Neurosurg. 2018 Sep 17. doi: 10.1055/s-0038-1669474. [Epub ahead of print] PubMed PMID: 30223290.
4)

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5)

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