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Cerebral angiography, is still performed almost exclusively in a hospital-based setting, despite sharing many features with other endovascular procedures commonly performed in outpatient centers. As interest grows in performing cerebral angiography in outpatient endovascular centers, much can be learned from the decades of experience that our interventional colleagues have in the outpatient setting.

Silva et al. examined the outpatient experience of other interventional fields and apply key principles to evaluate the prospect of outpatient neurointervention. The literature suggests that cerebral angiography can feasibly be performed in an outpatient center in both private and academic settings, as some groups have begun to do. Outpatient endovascular centers have helped to improve the patient experience, liberate inpatient resources, and control costs in other interventional fields, and might offer neurointerventionalists an opportunity to do the same ¹⁾.

Indications

Here are some common indications for cerebral angiography:

Intracranial Aneurysm diagnosis and Assessment:

Cerebral angiography is often used to identify and characterize intracranial aneurysms, which are abnormal bulges or balloon-like dilations in blood vessels that can be at risk of rupture. Arteriovenous Malformation (AVM) Diagnosis:

AVM is a congenital condition characterized by abnormal connections between arteries and veins in the brain. Cerebral angiography helps in visualizing these abnormal vessels. Ischemic Stroke Evaluation:

In cases of ischemic stroke, where blood flow to a part of the brain is blocked, cerebral angiography can be used to assess the blood vessels for any obstructions or narrowing. Intracranial Stenosis Assessment:

Cerebral angiography is employed to evaluate the degree of stenosis or narrowing of the intracranial arteries, which can contribute to ischemic events. Subarachnoid Hemorrhage Investigation:

When a patient presents with a subarachnoid hemorrhage (bleeding into the space between the brain and the surrounding membranes), cerebral angiography is performed to identify the source of bleeding, such as an aneurysm. Vasculitis and Inflammatory Disorders:

Cerebral angiography may be used to investigate inflammatory conditions affecting the blood vessels of the brain, such as vasculitis. Preoperative Planning for Neurosurgery:

Neurosurgeons may use cerebral angiography for preoperative planning, especially in cases where vascular abnormalities need to be precisely located and understood before surgery. Tumor Evaluation:

Cerebral angiography can be employed to visualize the blood supply to brain tumors, aiding in treatment planning and understanding the vascularization of the tumor. Evaluation of Moyamoya Disease:

Moyamoya disease is a rare vascular disorder characterized by the narrowing of the arteries at the base of the brain. Cerebral angiography is often used to diagnose and evaluate this condition. Post-Traumatic Vascular Assessment:

In cases of head trauma, cerebral angiography may be used to assess and diagnose vascular injuries or abnormalities. It's important to note that while cerebral angiography provides detailed images of the blood vessels, it is an invasive procedure and carries some risks. The decision to perform cerebral angiography is based on clinical symptoms, imaging findings, and the overall clinical condition of the patient. The benefits and risks should be carefully considered by the medical team before recommending the procedure.

Cerebral angiography is generally recommended in patients with subarachnoid hemorrhage (SAH) by positive lumbar puncture (LP) but negative findings on computed tomography (CT).

The diagnostic yield of cerebral angiography is high (45.7%) in patients with CT-/LP+ SAH. Higher red blood cell counts were noted in patients with cerebral aneurysms but no clinical or laboratory parameter can reliably predict the presence of a vascular anomaly. Thus, it is reasonable to perform cerebral angiography in all patients with CT-/LP+ SAH ².

In the era before computerized tomography (CT), extradural hematomas were usually diagnosed by invasive and less accurate techniques, such as cerebral angiography, pneumoencephalography, or exploratory burr holes.

Risks

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The major risk of selective cerebral angiography is transient or permanent neurologic deficit resulting from improper technique, catheter manipulation, or contrast medium infusion. In addition, selective injections of hyperosmotic contrast materials into the common and external carotid arteries may cause pain, resulting in patient movement, decreased image quality, and increased patient discomfort. It is also well established that hyperosmotic contrast media injected into the vertebral or carotid arteries may produce transient disruption of the blood-brain barrier (BBB) with associated neurologic deficit or seizure.

In an effort to further decrease the incidence of patient discomfort and neurotoxicity associated with the ionic contrast agents currently used for cerebral angiography , a number of new, hydrosoluble, nonionic contrast media have been developed

Iopamidol

Methylglucamine iothalamate

1)

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