Dynamic computed tomography angiography

Dynamic CT angiography (dCTA) augments traditional CTA with temporal resolution and has been demonstrated to influence preoperative planning in skull base surgery.

Three hundred twenty-five dynamic CTA cases from a single institution were reviewed for indication of study, findings, and comparison to other modalities of imaging.

The most frequent application of dCTA was pre-operative surgical planning (59.4%); resection of skull base tumors represented the majority of these pre-operative studies (93.3%). It was also used to evaluate new neurological symptoms (20.9%). Of these, the most common symptoms prompting a dCTA study included headache (22.1%) and visual field deficit (11.8%). The most commonly visualized vascular lesions were partial (22.9%) and complete vascular occlusions (9.0%). Dynamic CTA has also been useful in post-operative imaging for vascular malformations (9.5%) and tumors (2.5%). Finally, dCTA was employed to evaluate ambiguous abnormal findings observed on other imaging modalities (7.7%). Cerebral dCTA ruled out inconclusive abnormal vascular findings visualized on other imaging modalities (64.0%) more frequently than it confirmed them (32.0%), and was inconclusive in a singular case (4.0%).

Cerebral dCTA is an evolving new technology with a diverse spectrum of potential applications. In addition to its role in guiding pre-operative planning for skull base surgical cases, dynamic CTA offers excellent spatial and temporal resolution for assessment of vascular lesions [1].

1)
Gupta S, Bi WL, Mukundan S, Al-Mefty O, Dunn IF. Clinical applications of dynamic CT angiography for intracranial lesions. Acta Neurochir (Wien). 2018 Jan 20. doi: 10.1007/s00701-018-3465-4. [Epub ahead of print] PubMed PMID: 29353408.