

Use of Dual-Energy CT Post Endovascular Treatment of Cerebral Aneurysm

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Abstract : Background: Endovascular management is well established as a mainstay treatment option for cerebral aneurysms. It is also well established that immediate post procedural imaging can be difficult to interpret due to the presence of contrast material. However, through the use of Dual-Energy computed tomography, it has become possible to differentiate contrast extravasation and intracranial haemorrhage. This case illustrates the importance of this technology following endovascular treatment of an unruptured cerebral aneurysm. Case Presentation: A 79-year-old female was found to have an unruptured large intracavernous ICA fusiform aneurysm on CT Brain Angiogram after presenting with acute ophthalmoplegia. This ophthalmoplegia was caused by mass effect from the aneurysm and subsequently the aneurysm was treated with an endovascular flow diverting stent. CT brain was performed post operatively due to a reduced level of consciousness and this showed diffuse subarachnoid hyperdensity of the left hemisphere. The use of Dual-Energy CT allowed accurate differentiation and illustrated diffuse contrast material extravasation, allowing patient to continue on dual-antiplatelets and therapeutic anticoagulation to reduce the risk of ischaemic injury post endovascular stent. Conclusion: Endovascular treatment options for management of intracranial aneurysms are constantly evolving. The use of Dual-Energy CT therefore has an integral role in accurately diagnosing any post-operative complications. Specifically, differentiating between subarachnoid haemorrhage and contrast extravasation is vital in these patients due to the significant consequences to their ongoing management in regards to continuation or cessation of antiplatelets or anticoagulation. With increasing access to this technology, its use should become standard practice in the post-operative investigation of these patients undergoing endovascular treatment.

Keywords : aneurysm, computed tomography, contrast extravasation, dual-energy CT, endovascular, subarachnoid haemorrhage

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