Appearance of the Neuroform stent on computed tomography angiographic images: imaging pitfall

Case illustration

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This case illustrates the previously undescribed computed tomography (CT) angiographic appearance of the Neuroform stent (Boston Scientific Corporation). This 48-year-old woman with a history of basilar artery (BA) aneurysm treated with coil embolization presented with severe headache but was otherwise neurologically normal. Initial cranial CT without contrast (not shown) did not show subarachnoid hemorrhage. Lumbar puncture was not performed because the patient was receiving anticoagulation therapy. Computed tomography angiography images showed intraluminal metallic density within the BA and left posterior cerebral artery (Fig. 1). Digital subtraction (DS) angiography (Fig. 2 right) demonstrated the coil mass to lie entirely within the aneurysm sac; the intraluminal metallic density seen on the CT angiogram was due to the radiopaque markers on the Neuroform stent, not due to a prolapsed coil. The patient’s headache was managed symptomatically and she was discharged to home.

This case adds to the list of limitations of CT angiography. In the detection of aneurysms larger than 3 mm, the sensitivity and specificity of CT angiography have been reported as 89 and 98%, respectively.1 In a study by Sasiadek et al.,2 CT angiography correctly revealed 128 aneurysms in 106 patients, including seven lesions not seen on DS angiographic images, with only one false negative. An aneurysm clip or coil causes a streaklike artifact on CT angiographic images. This artifact adds difficulty in evaluating parent vessel patency and detecting residual aneurysm. In comparison with DS angiography, the sensitivity of CT angiography for detecting residual remnant aneurysms after clip placement is relatively low (48%), whereas its specificity is high (93%).3 This case illustrates a potential pitfall in interpreting the CT angiographic appearance of the Neuroform stent. (DOI: 10.3171/JNS-07/12/1249)

Fig. 1. Axial CT angiography images demonstrating metallic artifact due to the coil mass in the BA aneurysm and stent markers. Left: The BA lumen is obscured by metallic density from the proximal stent marker (arrowhead). Right: Metallic density representing the BA aneurysm coil mass (arrow) and metallic density overlying the left P1 (arrowhead) are evident. The metallic density “within” the P1 could represent a prolapsed or migrated coil, but subsequent catheter angiography (Fig. 2) revealed it to represent the distal radiopaque markers of the stent.

Fig. 2. Anteroposterior left vertebral artery angiograms. Left: Initial mask image demonstrates the aneurysm coil mass (arrow) and the proximal and distal stent markers (arrowheads). The left ophthalmic artery aneurysm clip is also evident. Right: A DS image shows that the BA and the left P1 are normal in caliber and there is only a minimal residual BA aneurysm.

References