Pseudo-Subarachnoid Hemorrhage: A Potential Imaging Pitfall Associated with Hypoxic Encephalopathy

Given, C. A. * Burdette, J. H. * Williams, D. W. * Elster, A. D.
Wake Forest University Baptist Medical Center, Winston-Salem, NC

Purpose
To demonstrate and discuss the infrequent but important finding of pseudo-subarachnoid hemorrhage (SAH) in patients who have suffered an hypoxic/anoxic injury.

Materials & Methods
We present five proved cases of pseudo-SAH involving patients who subsequently expired as a result of hypoxic encephalopathy. All patients were evaluated with routine CT examinations of the brain without administration of intravenous contrast.

Results
The CT images in each patient revealed diffuse hyperdensity in the basal cisterns in an appearance similar to aneurysmal SAH. None of the patients had the typical distribution of nonaneurysmal perimesencephalic-SAH. In two of the patients, the prospective CT interpretation by the radiologist cited true SAH as the etiology of this increased attenuation within the subarachnoid spaces. In the remaining three cases, a pseudo-SAH appearance of the basal cisterns was prospectively suspected. All of the five patients were proven to lack true SAH: three patients underwent an autopsy, one patient had a negative lumbar puncture, and one patient had two normal cerebral arteriograms.

Conclusion
Radiologists and clinicians should be aware of this important potential imaging pitfall of pseudo-SAH on routine unenhanced CT examinations. While there are other mimics of aneurysmal-SAH, such as intrathecal contrast, leptomeningitis, and contrast neurotoxicity, we have found the pseudo-SAH appearance to be more common in cases of hypoxic encephalopathy. The apparent increased density within the subarachnoid spaces is most likely due to a combination of low attenuation within the adjacent edematous cortex, obliteration of the subarachnoid spaces with loss of the low density CSF, and stagnant flow within the vasculature secondary to elevated intracranial pressure.

References