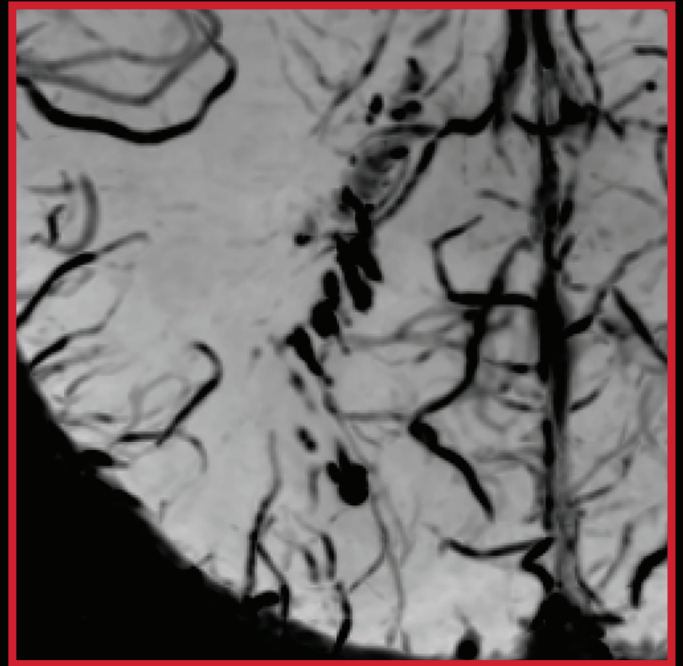
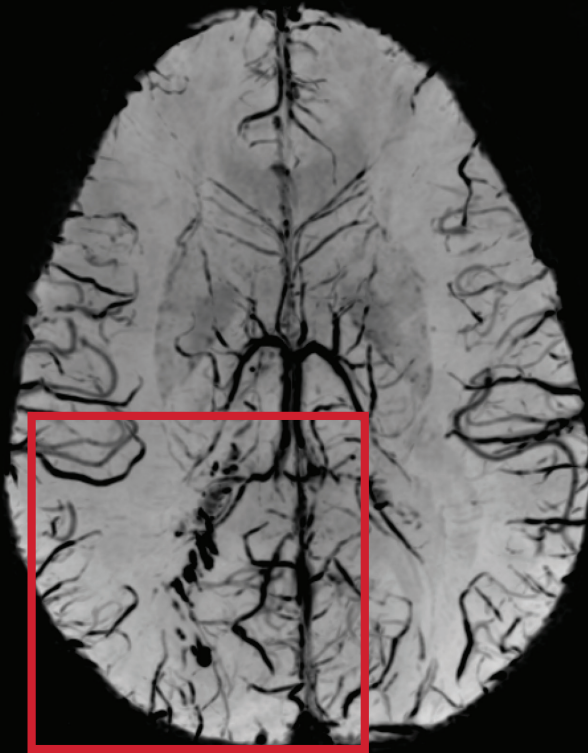


Enhanced Flow-Sensitive Black Blood



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HISTORY

This is a 60-year-old man with continued headaches three months after sustaining a concussion.

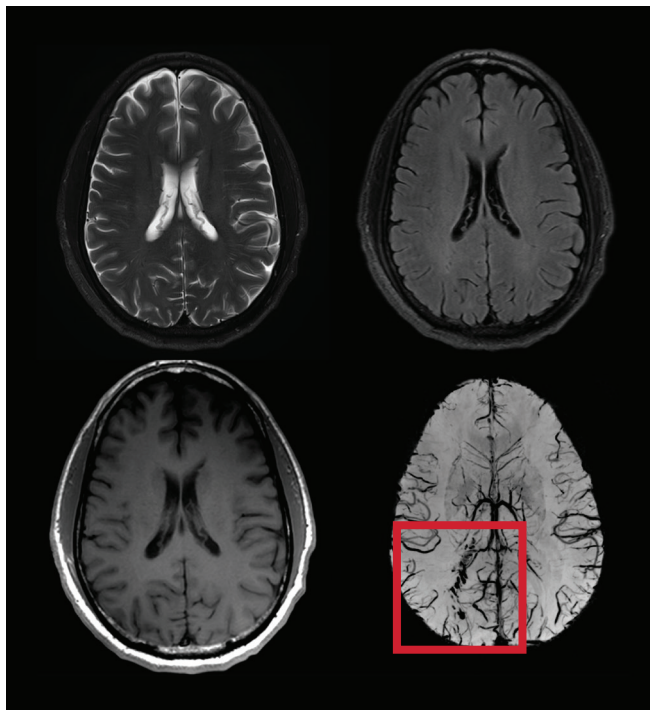
IMAGING FINDINGS

The brain appears essentially normal on the conventional sequences. However, the enhanced Flow-Sensitive Black Blood (eFSBB) sequence clearly shows small foci of susceptibility hypointensity reflecting hemosiderin deposition within the right parietal white

matter. These hemosiderin deposits seen on the eFSBB raise the possibility of traumatic axonal injury.

DISCUSSION

Canon Medical Systems' Flow-Sensitive Black Blood (FSBB) technique utilizes motion probing gradients (MPGs) in a 3D Field Echo (FE) sequence to generate image contrast from both T2* susceptibility effects as well as intra-voxel incoherent motion dephasing effects. In other words, FSBB sequence builds upon the typical susceptibility contrast in T2*-weighted FE sequences by adding MPGs to generate additional signal dephasing in slow flowing vessels, further enhancing depiction of the

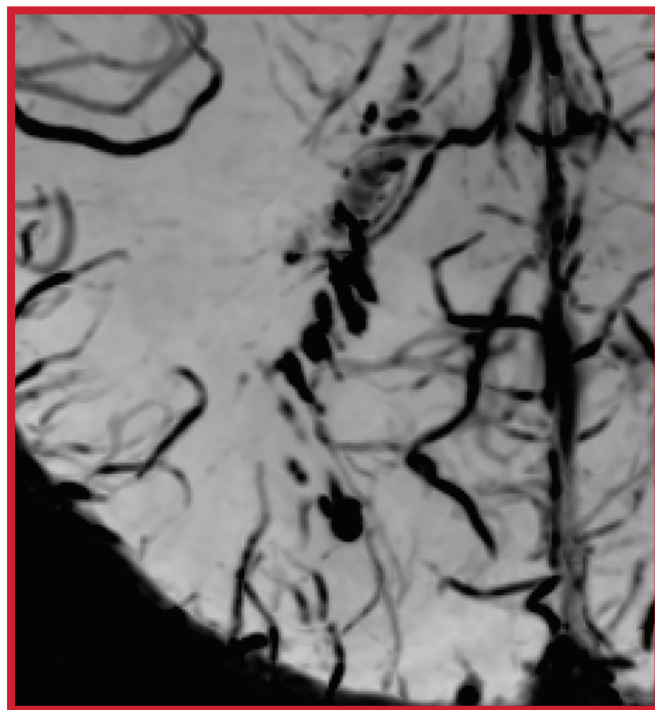


Canon Medical Systems' eFSBB complements a routine brain exam with the ability to demonstrate small foci of hemosiderin, likely reflecting sequela of traumatic axonal injury in the setting of recent concussion.

vessels. Canon Medical Systems' latest eFSBB sequence further enhances vessel depiction by applying a COSine algorithm¹, during post processing, to enhance the contrast between blood vessels or microhemorrhages and background tissue.

CONCLUSION

In this case, Canon Medical Systems' eFSBB technique allowed for detection of subtle traumatic axonal injury in this patient with continuing, unexplained symptoms



after concussion. The finding was not visible on other conventional sequences. While there is no cure for axonal injury, this diagnosis allowed the managing neurologist to discontinue other lines of investigation into the etiology of the headache and confidently counsel and reassure the patient and his family.

REFERENCES

1. Kimura et al. Phase Enhancement for Time-of-Flight and Flow-Sensitive Black Blood MR Angiography. *Magn. Reson. Med.* 66:437-447 (2011)

**The clinical results described in this paper are the experience of the author. Results may vary due to clinical setting, patient presentation and other factors. eFSBB is indicated as a non-contrast solution to visualize the small and/or slow vessels. It can provide enhanced depiction of those vessels with a new phase-enhanced filter.*

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