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High-Pass-Filtered Phase Image: Left- versus Right-Handed MR Imaging Systems

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High-Pass-Filtered Phase Image: Left- versus Right-Handed MR Imaging Systems

We read with interest the article entitled “Detection of Intratumoral Calcification in Oligodendrogliomas by Susceptibility-Weighted MR Imaging”¹ and would like to comment on the appearance of calcification on the high-pass-filtered phase images.

The authors reported that the paramagnetic (authors wrote “diamagnetic”) hemorrhagic component of the tumor would cause a negative phase shift and appear as dark signal on the high-pass-filtered phase images, while the diamagnetic (authors wrote “paramagnetic”) intratumoral calcifications would cause an opposite positive phase shift and appear as bright signal on the high-pass-filtered phase images. This description is true, but only in the case of right-handed MR imaging systems, while in left-handed MR imaging systems, the complete opposite signal would be seen: Paramagnetic substances would appear bright, while diamagnetic substances would appear dark.^{2,3}

In Figs 2D and 3D of the above-mentioned article, the high-pass-filtered phase images are those of a left-handed MR imaging system, evident by the bright signal of the veins (paramagnetic deoxyhemoglobin).³

The article showed that high-pass-filtered phase images can depict intratumoral calcification in oligodendrogliomas better

than conventional MR images; this finding has been reported before.⁴ Understanding the contrast appearance of high-pass-filtered phase images on left-handed versus right-handed MR imaging systems would make distinguishing diamagnetic calcification from paramagnetic hemorrhage a much easier task and prevent any possible confusion.

REFERENCES

1. Zulfiqar M, Dumrongpisutikul N, Intrapiromkul J, et al. **Detection of intratumoral calcification in oligodendrogliomas by susceptibility-weighted MR imaging.** *AJNR Am J Neuroradiol* 2012;33:858–64
2. Duyn J, Speck O. **Brain Anatomy with Phase.** In: Haacke EM, Reichenbach JR. *Susceptibility Weighted Imaging in MRI: Basic Concepts and Clinical Applications.* Hoboken, New Jersey: John Wiley & Sons; 2011:121–36
3. Mittal S, Thomas B, Wu Z, et al. **Novel approaches to imaging brain tumors.** In: Haacke EM, Reichenbach JR. *Susceptibility Weighted Imaging in MRI: Basic Concepts and Clinical Applications.* Hoboken, New Jersey: John Wiley & Sons; 2011:151–70
4. Wu Z, Mittal S, Kish K, et al. **Identification of calcification with MRI using susceptibility-weighted imaging: a case study.** *J Magn Reson Imaging* 2009;29:177–82

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