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

T.M. Mehemed and A. Yamamoto

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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.

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T.M. Mehemed
A. Yamamoto

Department of Diagnostic Imaging and Nuclear Medicine
Kyoto University Graduate School of Medicine
Kyoto, Japan

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