

## THE CENTRAL VEIN SIGN IN MULTIPLE SCLEROSIS: A BIOMARKER EVALUATED ON A 3T MRI SCANNER

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### ABSTRACT

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The central vein sign (CVS) is a promising MRI biomarker in multiple sclerosis (MS). CVS has recently been proposed to improve the accuracy and speed of MS diagnosis. Evidence indicates that the presence of CVS in individual lesions can accurately differentiate MS from other diseases that mimic this condition, such as hypertensive microangiopathy, atypical demyelination, and neuromyelitis optica. Most studies have used 7T MRI scanners, which limits their clinical applicability. Recently, it has been demonstrated that the fusion of the FLAIR and SWI sequences, generating FLAIR\*, allows CVS visualization even on 3T scanners. Many studies have confirmed that CVS at 3T is a specific imaging finding for MS.

**Keywords:** Multiple sclerosis; central vein sign; demyelinating disease

### IMAGE DESCRIPTION

The central vein sign (CVS) is a promising MRI biomarker in multiple sclerosis (MS)<sup>1</sup>. CVS has recently been proposed to improve the accuracy and speed of MS diagnosis<sup>2</sup>. Evidence indicates that the presence of CVS in individual lesions can accurately differentiate MS from other diseases that mimic this condition, such as hypertensive microangiopathy, atypical demyelination, and neuromyelitis optica<sup>1-3</sup>. Most studies have used 7T MRI scanners, which limits their clinical applicability<sup>4</sup>. Recently, it has been demonstrated that the fusion of the FLAIR and SWI sequences, generating FLAIR\*, allows CVS visualization even on 3T scanners<sup>4,5</sup>. Many studies have confirmed that CVS at 3T is a specific imaging finding for MS<sup>5</sup>. At our institution, with our 3T equipment (*Philips Ingenia 3T*), FLAIR\* has proven to be a great tool for identifying CVS, more frequently in the periventricular zone (Figure 1) but also in juxtacortical and cerebellar lesions, in addition to satisfactorily evidencing white matter lesions, thus summing up the benefits of each sequence separately (Figures 2 and 3).

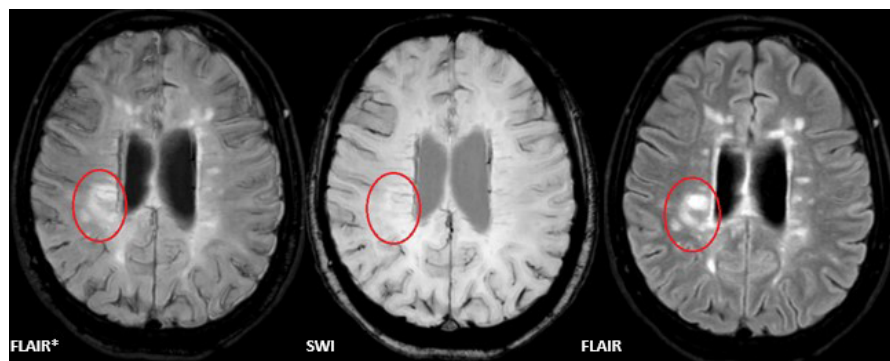


Figure 1

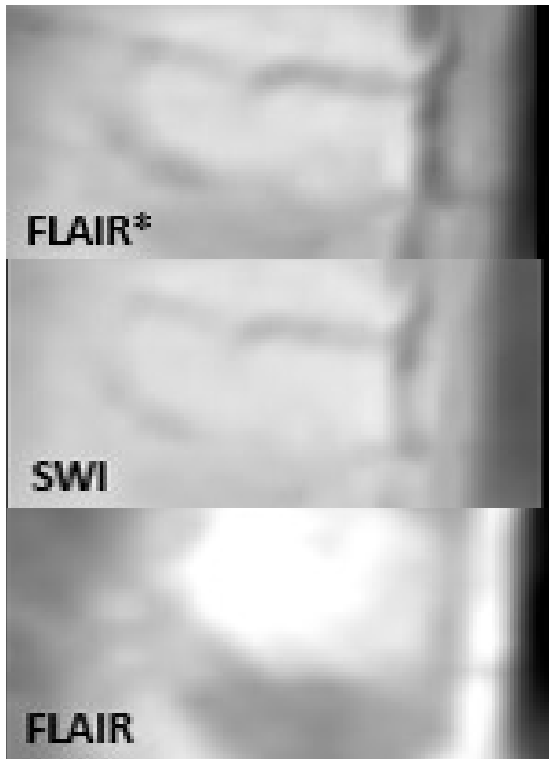


Figure 2

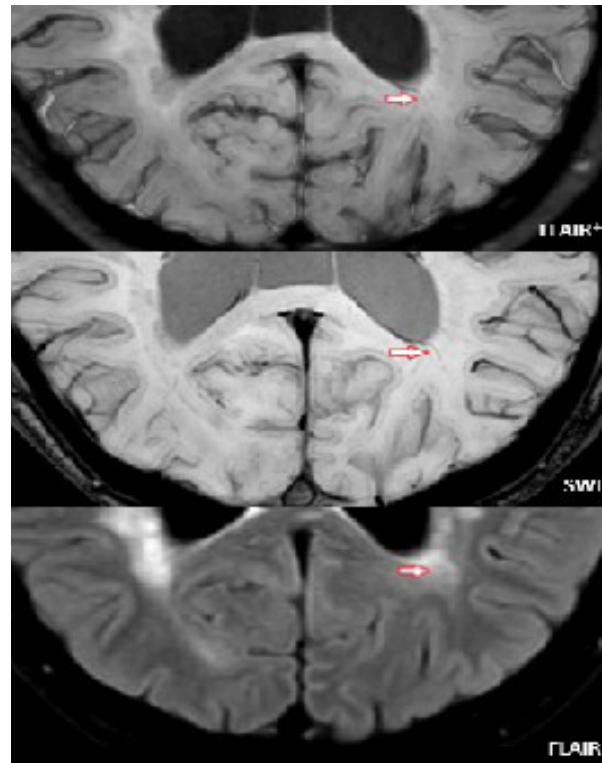


Figure 3

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