

Leptomeningeal enhancement analysis in diagnostic clinical setting.

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Objective

In this study, prevalence of leptomeningeal enhancement foci at low field in a routine diagnostic setting was evaluated.

Methods

Inclusion criteria: MS patients (n=242; 205 relapsing remitting MS, 84%; 37 secondary chronic progressive MS) that underwent MRI scan with a standardized protocol, between January 2013 and January 2015.

MRI protocol: magnet 1.5T (Philips), included an axial FLAIR (thickness: 4mm) acquired 2 minutes after gadolinium injection.

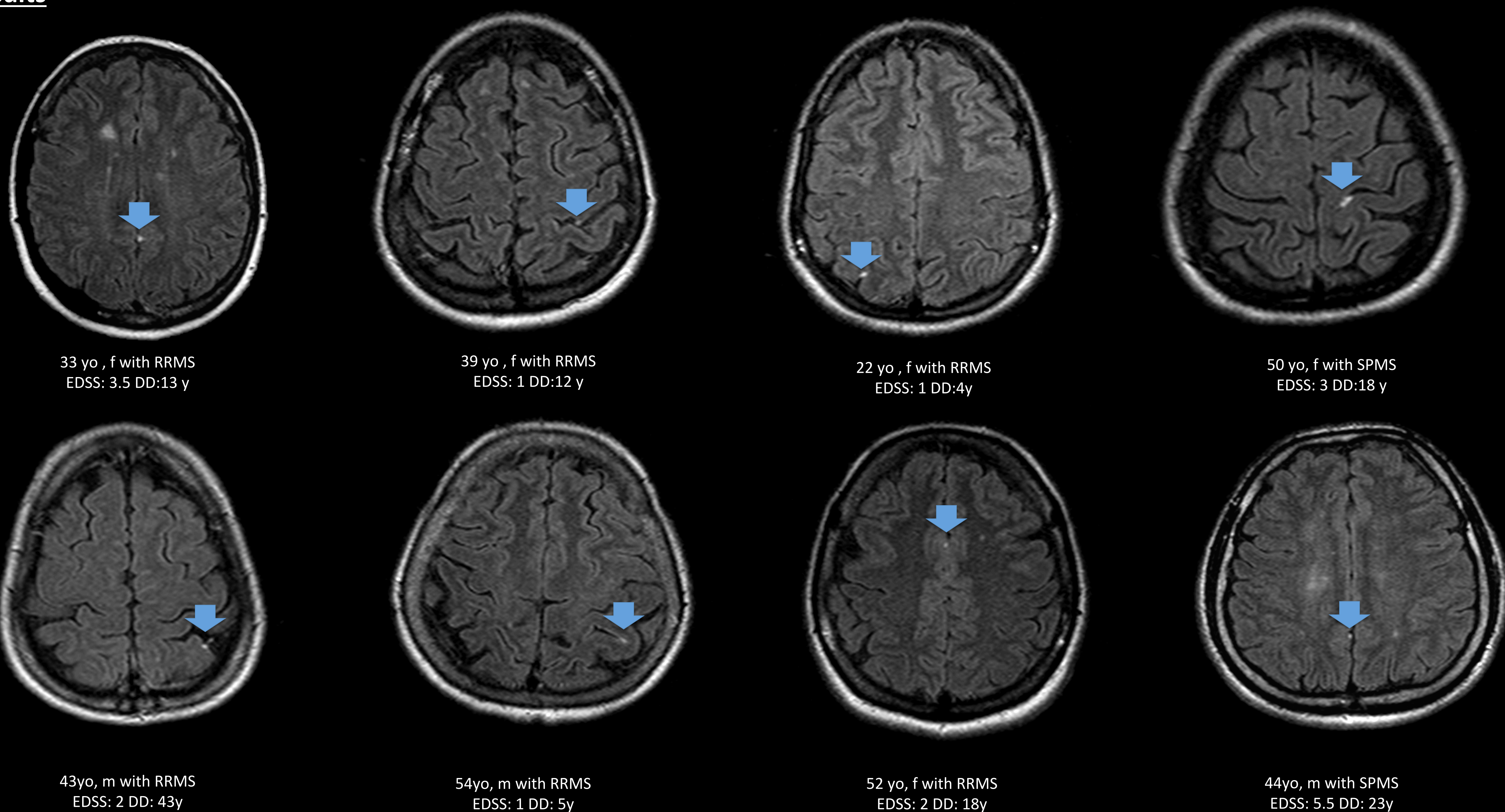
A single expert blinded to clinical data evaluated the images and reported presence, site and location of leptomeningeal enhancement foci.

In Multiple Sclerosis (MS) small foci of leptomeningeal enhancement in post gad FLAIR scans have been described¹ and proposed as an in vivo marker of meningeal inflammation and of compartmentalization of the immune response in the CNS.

However these data were obtained in a research setting with 3D-FLAIR sequences acquired in high field magnets and delaying acquisition beyond 10 minutes after gadolinium injection.

¹ Gadolinium-based MRI characterization of leptomeningeal inflammation in multiple sclerosis. Absinta, Vuolo L et al, Neurology. 2015 Jul 7;85(1):18-28. Apr 17.

Results



Examples of LME foci are shown in the figure

Out of the 242 MS patients, 28 (11%) showed at least one focus of leptomeningeal enhancement. The enhancement was more observed in 8/37 cases in SP MS (21%) than in 20/205 RR MS (10%). Disease duration and age were positively related to the presence of leptomeningeal enhancement. In addition, a trend for higher EDSS in positive patients was observed.

	Pos	Neg
Tot	28	214
RRMS	20	185
SPMS	8	29
Age (median, range)	50 (22-68)	43 (22-71)
EDSS (median, range)	2 (0-6.5)	1.5 (0-7)
DD (median, range)	15 (3.4-36)	13 (1-46)

Pos: at least one focus of LME; Neg: No foci of LME; RRMS: relapsing-remitting multiple sclerosis; SPMS: secondary progressive multiple sclerosis; EDSS: Expanded Disability Status Scale; DD: disease duration.

Conclusion

This study confirms that leptomeningeal enhancement is a common finding in MS patients even in a routine diagnostic setting. However the prevalence of foci observed in this study was lower, suggesting that the delay of the scan acquisition after the gadolinium injection is critical. Despite the difference in the overall prevalence, the different frequency in the RR and in the SP patients observed was consistent with that previously reported. The higher prevalence in progressive patients is consistent with the pathological findings about leptomeningeal foci observed in MS patients.

DISCLOSURES

LV, CM, EM, BF have nothing to disclose.

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