

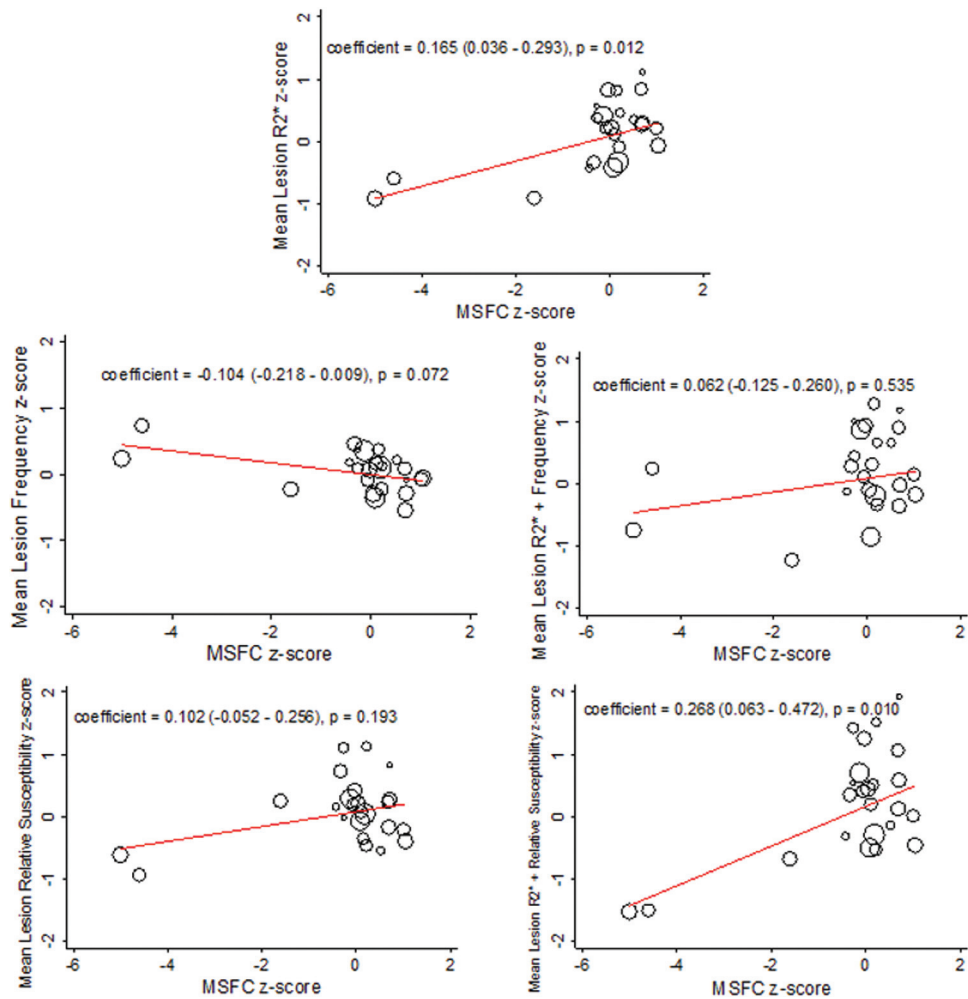
On-line Table: Frequency of lesion patterns on susceptibility MRI^a

Lesion Pattern	MS Disease Subtype						EDSS		MFIS					
	All Lesions, n = 306 Lesions, 24 Subjects		RRMS, n = 263 Lesions, 21 Subjects		SPMS/PPMS, n = 43 Lesions, 3 Subjects		<5.0, n = 214 Lesions, 18 Subjects		≥5.0, n = 92 Lesions, 6 Subjects		<40, n = 167 Lesions, 11 Subjects		≥40, n = 139 Lesions, 13 Subjects	
R2*														
Hypointense, no rim	268 (88%)	228 (87%)	40 (93%)	.243	181 (85%)	87 (95%)	.015 ^b	153 (92%)	115 (83%)	.019				
Hypointense, hyperintense rim	16 (5%)	13 (5%)	3 (7%)	.579	11 (5%)	5 (5%)	.915	9 (5%)	7 (5%)	.890				
Isointense, no rim	18 (6%)	18 (7%)	0 (0%)	.077	18 (8%)	0 (0%)	.004 ^b	2 (1%)	16 (12%)	<.001 ^b				
Phase														
Hypointense, no rim	26 (9%)	23 (9%)	3 (7%)	.700	17 (8%)	9 (10%)	.597	19 (11%)	7 (5%)	.048 ^b				
Hypointense, hyperintense rim	10 (3%)	9 (3%)	1 (2%)	.708	5 (2%)	5 (5%)	.162	7 (4%)	3 (2%)	.319				
Isointense, no rim	129 (42%)	110 (42%)	19 (44%)	.771	93 (43%)	36 (39%)	.482	76 (46%)	53 (38%)	.193				
Isointense, hyperintense rim	29 (10%)	19 (7%)	10 (23%)	.001 ^b	15 (7%)	14 (15%)	.025	8 (5%)	21 (15%)	.002 ^b				
Isointense, hypointense rim	9 (3%)	9 (3%)	0 (0%)	.218	8 (4%)	1 (1%)	.208	4 (2%)	5 (4%)	.536				
Hyperintense, no rim	90 (29%)	80 (30%)	10 (23%)	.339	63 (29%)	27 (29%)	.987	50 (30%)	40 (29%)	.824				
Hyperintense, hypointense rim	9 (3%)	9 (3%)	0 (0%)	.218	9 (4%)	0 (0%)	.046 ^b	3 (2%)	6 (4%)	.194				
Any core, hypointense rim	9 (3%)	9 (3%)	0 (0%)	.218	8 (4%)	1 (1%)	.208	4 (2%)	5 (4%)	.536				
Any core, hyperintense rim	39 (13%)	28 (11%)	11 (26%)	.006 ^b	20 (9%)	19 (21%)	.007 ^b	15 (9%)	24 (17%)	.030 ^b				
Phase with any rim	48 (16%)	37 (14%)	11 (26%)	.078	28 (13%)	20 (22%)	.094	19 (11%)	29 (21%)	.012 ^b				
QSM														
Isointense, no rim	110 (36%)	94 (36%)	16 (37%)	.852	82 (38%)	28 (30%)	.188	69 (41%)	41 (29%)	.032 ^b				
Isointense, hyperintense rim	17 (6%)	10 (4%)	7 (16%)	.001 ^b	8 (4%)	9 (10%)	.034 ^b	5 (3%)	12 (9%)	.032				
Isointense, hypointense rim	2 (1%)	1 (0%)	1 (2%)	.142	1 (0%)	1 (1%)	.537	0 (0%)	2 (1%)	.120				
Hyperintense, no rim	158 (52%)	143 (54%)	15 (35%)	.018 ^b	111 (52%)	47 (51%)	.900	86 (51%)	72 (52%)	.958				
Hyperintense, hyperintense rim	13 (4%)	11 (4%)	2 (5%)	.888	9 (4%)	4 (4%)	.955	4 (2%)	9 (6%)	.078				
Hyperintense, hypointense rim	5 (2%)	3 (1%)	2 (5%)	.092	2 (1%)	3 (3%)	.141	3 (2%)	2 (1%)	.806				
Any core, hypointense rim	7 (2%)	4 (2%)	3 (7%)	.027 ^b	3 (1%)	4 (4%)	.114	3 (2%)	4 (3%)	.529				
Any core, hyperintense rim	18 (6%)	11 (4%)	7 (16%)	.002 ^b	9 (4%)	9 (10%)	.057	5 (3%)	13 (9%)	.019 ^b				
QSM with any rim	25 (9%)	15 (6%)	10 (23%)	<.001 ^b	12 (6%)	13 (14%)	.012 ^b	8 (5%)	17 (12%)	.013 ^b				

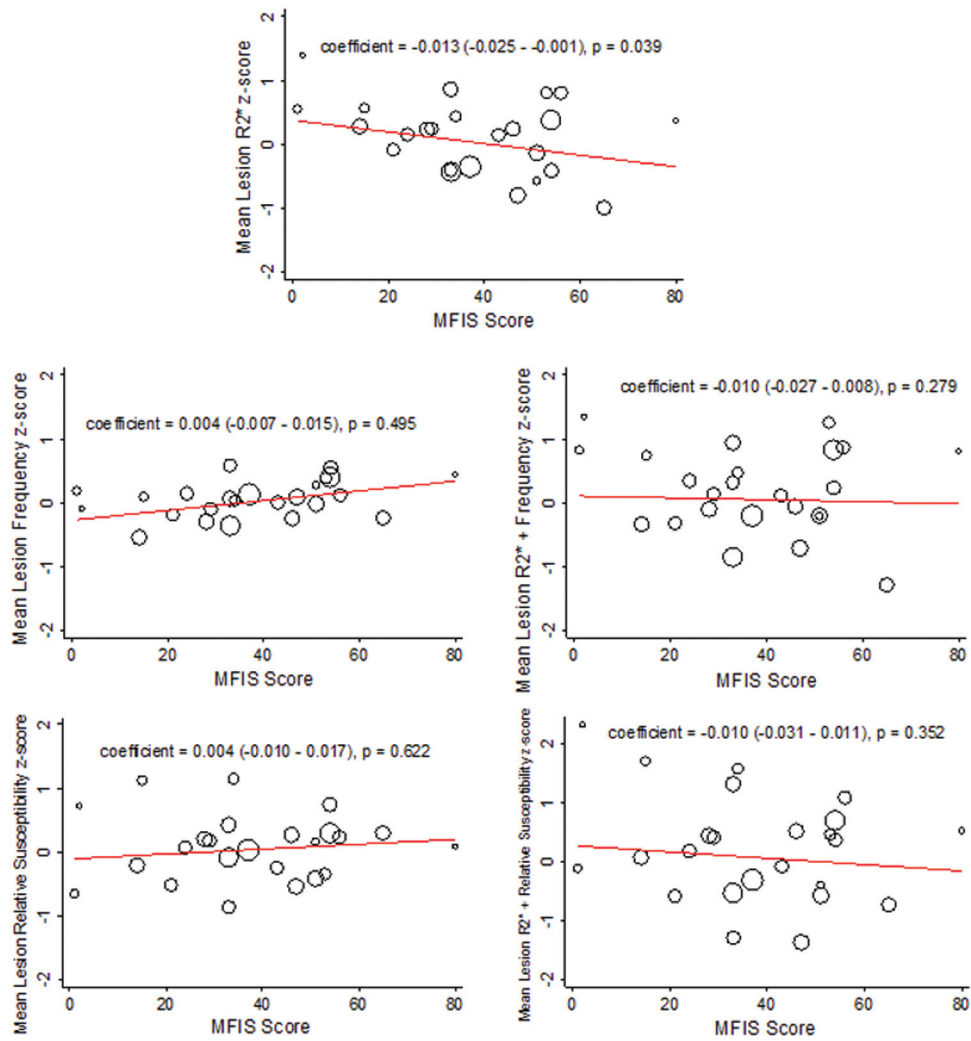
Note:—n indicates number of lesions in each group.

^a The appearance of lesion and lesion rim (if present) is described. The P value represents statistical significance for the χ^2 test of proportions, which was tested for groups as a whole (not per subject).

^b P < .05.



ON-LINE FIG 1. Relationship between MSFC and quantitative R2*, frequency, and relative susceptibility values. Shown are the results of mixed-model regression (adjusted for age and sex) for prediction of the quantitative MRI index value by the Multiple Sclerosis Functional Composite z score as represented by a fitted-values plot. The *open circles* represent fitted values based on the fixed and random effects from the model, with each *circle* thus representing 1 subject and the size of the *circle* weighted for the number of lesions that particular subject contributed to the model. The regression coefficient for the fixed-effects portion of the model is shown in each panel, along with the *P* value for the significance of that coefficient. To place all quantitative values in an equivalent space, we converted all values to z-score units (based on the mean and SD from all lesions). A significant inverse relationship was found between R2* and MSFC and for a combined index of R2* + relative susceptibility and MSFC, though this relationship was heavily influenced by data from a small number of subjects with the worst MSFC scores.



ON-LINE FIG 2. The relationship between fatigue and quantitative R2*, frequency, and relative susceptibility values. Shown are the results of mixed-model regression (adjusted for age and sex) for the prediction of the quantitative MRI index value by the Modified Fatigue Impact Scale score as represented by a fitted-values plot (see Fig 4 and “Materials and Methods” for details). A significant inverse relationship was found between R2* and MFIS.