

Magnetization Transfer Saturation per TR (MT_{sat}) better discriminates Normal-Appearing White Matter than Magnetization Transfer Ratio (MTR) in Multiple Sclerosis

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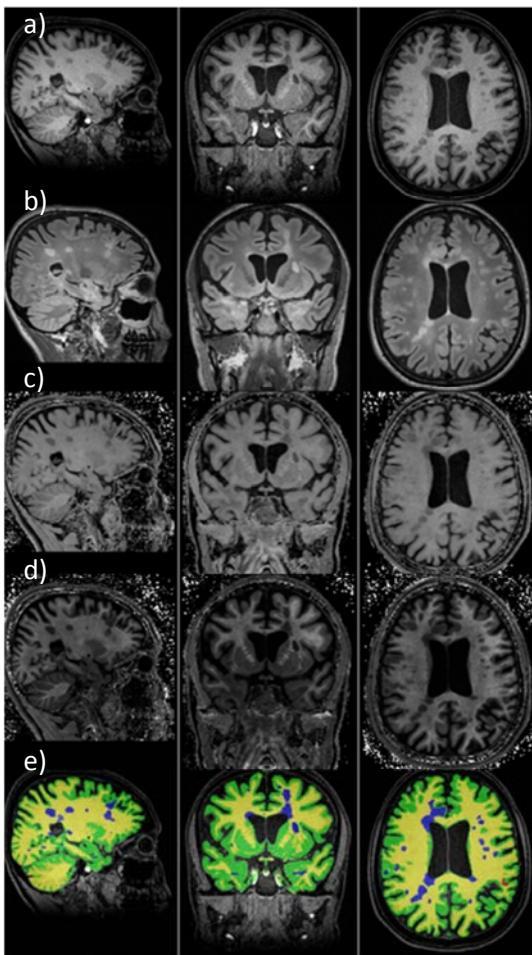


Figure 1. Representative co-registered images in an MS subject. a) MPRAGE b) T2-FLAIR c) MTR d) MT_{sat} e) tissue assignments [NAGM=yellow, NAWM=green, GML=red, WML=blue]

required. MT_{sat} also had much stronger NAGM/NAWM contrast than MTR due to the T1 dependence of MTR. Acquisition and analysis of MT_{sat} data is less time consuming than for fully quantitative MT, and hence more readily translated into large scale clinical studies.

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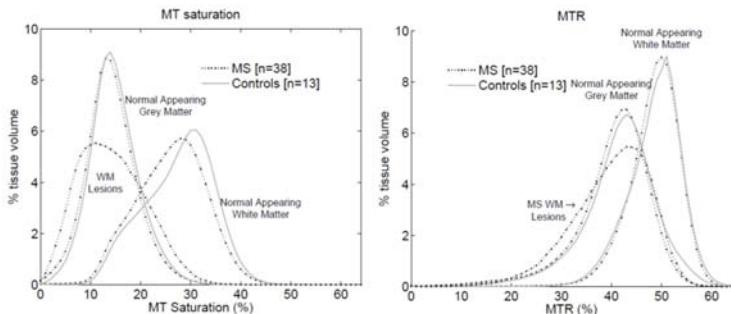


Figure 2. MTR and MT_{sat} histograms. MT_{sat} much more strongly differentiates NAGM and NAWM, but also NAWM between controls and MS subjects. Both MT contrasts highlight WMLs.

		NAWM	NAGM	WML	GML
MTR	MS	48.17±1.25	40.01±1.21	39.56±2.31	38.68±4.38
	Control	48.30±0.87	41.27±0.74		
	<i>p</i> =	0.35	0.00012		
MT _{sat}	MS	26.13±1.83	14.51±0.96	14.31±1.94	14.47±3.39
	Control	27.77±1.21	15.15±0.57		
	<i>p</i> =	0.00094	0.022		

Table 1. MTR and MT_{sat} means (\pm SD) in percent units. MTR does not differentiate NAWM between controls and MS subjects, though MT_{sat} does strongly.