MULTIPLE SCLEROSIS BRAIN WITH/WITHOUT IV CONTRAST 3T

INSTRUCTIONS AND PATIENT PREPARATION

Instructions	• Change patient into hospital issued gown and pants • 18- to 22-gauge IV access • Sagittal FLAIR using thin 3 mm slices
Position	Supine, head first
Coil	SENSE-Head-8 channel coil preferred. If a cervical spine MS evaluation is also done, then a 16 channel neurovascular coil is preferred
Landmark	Glabella

CONTRAST AGENT PARAMETERS

Contrast Agent	Dose	Injection Rate
Gadopiclenol (VUEWAY)	0.05 mmol/kg	1-2 mL/sec
Saline Flush	10-20 mL	1-2 mL/sec
Comments	• 3D scan optional postcontrast - reformat orthogonal planes as appropriate • Do 3D T2 FLAIR precontrast and reformat in orthogonal planes • T2 postcontrast done to provide increased delay between contrast and Axial T1 postcontrast • Postcontrast at least 1 plane should be similar sequence pre- and postcontrast	

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MR Gadopiclenol (VUEWAY®) Protocol for Philips Healthcare Systems
Central Nervous System

NW
IMAGING FORUMS, INC.

INFO PAGE

Scan Description	Survey Brain	AXIAL T1 +C	AXIAL T2 Fat Sat	AXIAL T2 FLAIR +C	Source DTI	SAGITTAL 3D T1	SAGITTAL 3D T2 FLAIR	SAGITTAL 3D T1 +C
Total scan duration	00:18.9	02:16.8	01:45.0	02:45.0	02:00.8	02:17.8	03:44.0	02:17.8
Rel. SNR	1	1	1	1	1	1	1	1
Act. TR (ms)	—	462	3000	—	4923	—	—	—
Act. TR/TI (ms)	—	—	—	11000 / 2800	—	—	8000 / 2400	—
Act. TE (ms)	—	10	80	120	68	—	267	—
Act. TR/TE (ms)	15 / 3.2	—	—	—	—	7.8 / 3.5	—	7.8 / 3.5
ACQ matrix M x P	124 x 84	276 x 180	224 x 175	316 x 175	112 x 112	220 x 220	240 x 240	220 x 220
ACQ voxel MPS (mm)	2.02 / 2.98 / 10.0	0.80 / 0.99 / 3.00	0.98 / 1.10 / 3.00	0.70 / 1.10 / 3.00	2.00 / 2.00 / 3.00	1.09 / 1.09 / 1.00	1.00 / 1.00 / 2.00	1.09 / 1.09 / 1.00
REC voxel MPS (mm)	1.74 / 1.74 / 10.0	0.43 / 0.43 / 3.00	0.46 / 0.46 / 3.00	0.43 / 0.43 / 3.00	1.00 / 1.00 / 3.00	0.94 / 0.94 / 1.00	0.50 / 0.50 / 1.00	0.94 / 0.94 / 1.00
Scan percentage (%)	68	80	89	63	100	100	100	100
Act. slice gap (mm)	—	—	—	—	—	0	-1	0
Packages	—	2	5	3	1	—	—	—
Min. slice gap (mm)	—	0	0	0.6	0	—	—	—
Optimal slices	—	25	10	34	—	—	—	—
Max.slices	—	—	—	51	—	—	—	—
EPI factor	—	—	—	—	45	—	—	—
TFE shots	2	—	—	—	—	68	—	68
TFE dur. shot / acq (ms)	701.6 / 630.0	—	—	—	—	1752.0 / 1711.3	—	1752.0 / 1711.3
TFE shot interval (ms)	701.6	—	—	—	—	—	—	—
Min. TI delay	375.1	—	—	—	—	890.3	—	890.3
Act. WFS (pix) / BW (Hz)	1.125 / 386.2	—	—	—	—	2.080 / 208.9	—	2.080 / 208.9
Min. WFS (pix) / Max. BW (Hz)	0.509 / 854.3	—	—	—	—	0.482 / 901.9	—	0.482 / 901.9
WFS (pix) / BW (Hz)	—	2.676 / 162.3	1.619 / 268.3	1.999 / 217.3	13.193 / 32.9	—	0.475 / 913.7	—
BW in EPI freq. dir. (Hz)	—	—	—	—	1844.5	—	—	—
Full flow comp.	—	no	—	—	—	—	no	—
TSE es / shot (ms)	—	—	10.0 / 160	10.9 / 229	—	—	4.3 / 503	—
TEeff / TEequiv (ms)	—	—	80 / 72	120 / 106	—	—	267 / 128	—
Min. TR (ms)	—	462	2865	—	—	—	—	—
Min. TR/TI (ms)	—	—	—	7470 / 50	—	—	2912 / 50	—
Min. TR/TE (ms)	6.3 / 3.2	—	—	—	—	—	—	—
SPAIR TR (ms)	—	—	—	—	—	—	8000	—
SPAIR inv. delay (ms)	—	—	—	—	—	—	220	—
SPAIR offset act./default (Hz)	—	—	—	—	—	—	100 [220]	—
Local extremities SAR	—	< 72 %	< 36 %	< 21 %	—	< 3 %	< 2 %	< 3 %
Local torso SAR	< 31 %	—	—	—	< 83 %	—	—	—
Whole body SAR / level	< 0.7 W/kg / normal	< 0.2 W/kg / normal	< 0.1 W/kg / normal	< 0.1 W/kg / normal	< 1.9 W/kg / normal	0.0 W/kg / normal	0.0 W/kg / normal	0.0 W/kg / normal
SED	0.0 kJ/kg	0.0 kJ/kg	0.0 kJ/kg	0.0 kJ/kg	< 0.2 kJ/kg	0.0 kJ/kg	0.0 kJ/kg	0.0 kJ/kg
Coil Power	—	—	—	—	39%	—	—	—
Max B1+rms	0.90 uT	4.23 uT	2.99 uT	2.38 uT	1.47 uT	0.87 uT	0.64 uT	0.87 uT
PNS / level	17 % / normal	74 % / normal	24 % / normal	20 % / normal	86 % / 1st level	51 % / normal	65 % / normal	51 % / normal
dB/dt	15.4 T/s	66.4 T/s	18.9 T/s	18.9 T/s	112.7 T/s	49.9 T/s	96.9 T/s	49.9 T/s

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Sound Pressure Level (dB)	2.7	23	5	4.8	21.9	18.8	25.5	18.8

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MR Gadopiclenol (VUEWAY®) Protocol for Philips Healthcare Systems
Central Nervous System

NW IMAGING FORUMS, INC.

GEOMETRY

Scan Description	Survey Brain	AXIAL T1 +C	AXIAL T2 Fat Sat	AXIAL T2 FLAIR +C	Source DTI	SAGITTAL 3D T1	SAGITTAL 3D T2 FLAIR	SAGITTAL 3D T1 +C
SmartSelect	yes	yes	yes	yes	yes	yes	yes	yes
Coil 1 (exclude)	—	None	None	None	None	None	None	None
Uniformity	—	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
FOV AP (mm)	250	220	220	220	224	240	240	240
FOV (mm)	(3) 50, (17) 10	—	—	—	—	—	—	—
FOV FH (mm)	250	150	150	150	150	240	240	240
FOV RL (mm)	—	179	193	193	224	180	180	180
ACQ voxel size AP (mm)	2	0.8	1	0.7	2	1	1	1
ACQ voxel size FH (mm)	2	—	—	—	—	1	1	1
ACQ voxel size RL (mm)	—	1	1	0.9	2	1	2	1
Slice thickness (mm)	10	3	3	3	3	—	—	—
Bar orientation	RL	—	—	—	—	—	—	—
VOI orientation	transverse	—	—	—	—	—	—	—
VOI size AP (mm)	30	—	—	—	—	—	—	—
VOI size RL (mm)	30	—	—	—	—	—	—	—
VOI size FH (mm)	30	—	—	—	—	—	—	—
Recon voxel size AP (mm)	1.7	0.4	0.5	0.4	1	0.9	0.5	0.9
Recon voxel size FH (mm)	1.7	—	—	—	—	0.9	0.5	0.9
Recon voxel size RL (mm)	—	0.4	0.5	0.4	1	1	1	1
Fold-over suppression	no	no	no	no	no	no	no	no
P (mm)	50	—	—	—	—	—	—	—
A (mm)	50	—	—	—	—	—	—	—
Slice oversampling	—	—	—	—	—	default	user defined	default
oversample factor	—	—	—	—	—	—	1	—
ENCASE enable	—	—	—	—	—	no	—	no
Reconstruction matrix	144	512	480	512	224	256	480	256
SENSE	no	no	no	no	yes	no	no	no
P reduction (AP)	—	—	—	—	2.5	—	—	—
MB SENSE	—	—	—	—	no	—	—	—
CS-SENSE	no	yes	yes	yes	no	yes	yes	yes
reduction	—	2.5	2	2.2	—	3	6	3
denoising	—	system default	system default	system default	—	system default	system default	system default
k-t Acceleration	no	no	no	no	no	no	no	no
Stacks	3	1	1	1	1	1	1	1
type	(20) parallel	parallel	parallel	parallel	parallel	—	—	—
Slices	(3) 3, (17) 1	50	50	50	50	180	180	180
slice gap	user defined	user defined	user defined	user defined	user defined	—	—	—
gap (mm)	(20) 10	0	0	0	0	—	—	—
Slice orientation	sagittal, coronal, (18) transverse	transverse	transverse	transverse	transverse	sagittal	sagittal	sagittal
Fold-over direction	AP, (19) RL	RL	RL	RL	AP	AP	AP	AP
Fat shift direction	(2) F, (18) P	P	P	P	P	F	F	F

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radial axis	AP, RL, AP, (17) RL	—	—	—	—	—	—	—
radial angle (deg)	(20) 0	—	—	—	—	—	—	—
Minimum number of packages	—	1	1	3	1	—	—	—
Slice scan order	default	default	default	interleaved	default	—	—	—
Stack scan order	ascend	—	—	—	—	—	—	—
Multi-chunk	—	—	—	—	—	no	no	no
O-MAR	—	no	no	no	—	—	no	—
Move table per stack	no	—	—	—	—	—	—	—
Large table movement	no	no	no	no	no	no	no	no
Stack alignment	no	—	—	—	—	—	—	—
Stack sort order	no	—	—	—	—	—	—	—
PlanAlign	no	no	no	no	no	no	no	no
REST slabs	0	0	0	0	0	0	0	0
orientation	—	—	—	—	transverse	—	—	—
Patient position	head first	head first	head first	head first	head first	head first	head first	head first
Patient body position	head first	head first	head first	head first	head first	head first	head first	head first
Patient orientation	supine	supine	supine	supine	supine	supine	supine	supine
Patient body orientation	supine	supine	supine	supine	supine	supine	supine	supine

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Central Nervous System

IMAGING FORUMS, INC.

CONTRAST

Scan Description	SurveyBrain	AXIALT1 +C	AXIALT2 Fat Sat	AXIALT2 FLAIR +C	SourceDTI	SAGITTAL3D T1	SAGITTAL3D T2 FLAIR	SAGITTAL3D T1 +C		
Scan type	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging	Scan type	—
Scan mode	M2D	MS	MS	MS	MS	3D	3D	3D	Scan mode	—
Modified SE	—	no	no	—	no	—	—	—	Modified SE	—
3D non-selective	—	—	—	—	—	no	—	no	3D non-selective	—
Contrast enhancement	T1	—	—	—	—	T1	—	T1	Contrast enhancement	—
Acquisition mode	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian	Acquisition mode	—
Fast Imaging mode	TFE	none	TSE	TSE	EPI	TFE	TSE	TFE	Fast Imaging mode	—
3D VIEW	—	—	—	—	—	—	no	—	3D VIEW	—
TFE factor	42	—	—	—	—	220	—	220	TFE factor	—
TSE factor	—	—	15	21	—	—	110	—	TSE factor	—
3D non-selective	—	—	—	—	—	no	—	no	3D non-selective	—
Echoes	1	1	1	1	1	1	1	1	Echoes	—
TE	shortest	user defined	user defined	user defined	shortest	shortest	shortest	shortest	TE	—
Flip angle (deg)	20	90	90	—	90	8	—	8	Flip angle (deg)	—
Refocusing control	—	—	constant	constant	—	—	constant	—	Refocusing control	—
TR	user defined	range	user defined	user defined	shortest	shortest	user defined	shortest	TR	—
Halfscan	no	no	no	no	yes	no	—	no	Halfscan	—
Water-fat shift	maximum	maximum	maximum	user defined	minimum	maximum	maximum	maximum	Water-fat shift	—
IR delay (ms)	—	—	—	2800	—	—	2400	—	IR delay (ms)	—
RF Shims	—	—	—	—	fixed	—	—	—	RF Shims	—
Shim	—	default	default	default	PB-volume	auto	default	auto	Shim	—
ShimAlign	—	—	—	—	no	—	—	—	ShimAlign	—
mDIXON	no	no	no	no	no	no	no	no	mDIXON	—
Fat suppression	no	no	SPAIR	no	SPIR	no	SPAIR	no	Fat suppression	—
Grad Rev Fat suppr	—	—	—	—	no	—	—	—	Grad Rev Fat suppr	—
Water suppression	no	no	no	no	no	no	no	no	Water suppression	—
TFE prepulse	invert	—	—	—	—	invert	—	invert	TFE prepulse	—
BB pulse	—	no	no	no	no	—	no	—	BB pulse	—
MTC	no	no	no	no	no	no	no	no	MTC	—
Diffusion mode	no	no	no	no	DTI	no	no	no	Diffusion mode	—
T1 mapping	no	no	no	no	no	no	no	no	T1 mapping	—
SAR mode	high	high	high	high	high	high	high	high	SAR mode	—
B1 mode	default	default	default	default	default	default	default	default	B1 mode	—
SAR allow first level	yes	yes	yes	yes	yes	yes	yes	yes	SAR allow first level	—
PNS mode	low	high	low	low	high	moderate	high	moderate	PNS mode	—
Gradient mode	regular	maximum	default	default	maximum	default	maximum	default	Gradient mode	—
SofTone mode	no	no	user defined	user defined	no	no	no	no	SofTone mode	—

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IMAGING FORUMS, INC.

MOTION

Scan Description	Survey Brain	AXIAL T1 +C	AXIAL T2 Fat Sat	AXIAL T2 FLAIR +C	Source DTI	SAGITTAL 3D T1	SAGITTAL 3D T2 FLAIR	SAGITTAL 3D T1 +C
Cardiac synchronization	no	no	no	no	no	no	no	no
Respiratory compensation	no	no	no	no	no	no	no	no
Navigator respiratory comp	no	no	no	no	no	no	no	no
Flow compensation	no	yes	no	no	no	no	sensitized	no
fMRI echo stabilisation	no	—	—	—	—	no	—	no
Temporal slice spacing	—	default	default	—	default	—	—	—
Motion smoothing	—	—	no	no	—	—	no	—
NSA	1	2	1	1	1	1	1	1
SMART	—	no	—	—	—	—	—	—
MRE enable	no	no	no	no	no	no	no	no

DYNAMIC ANGIO

Scan Description	Survey Brain	AXIAL T1 +C	AXIAL T2 Fat Sat	AXIAL T2 FLAIR +C	Source DTI	SAGITTAL 3D T1	SAGITTAL 3D T2 FLAIR	SAGITTAL 3D T1 +C
Angio / Contrast enh.	no	—	—	—	—	no	—	no
Quantitative flow	no	—	—	—	—	no	—	no
CENTRA	—	—	—	—	—	no	no	no
Manual start	no	no	no	no	no	no	no	no
Dynamic study	no	no	no	no	no	no	no	no
dyn stabilization	—	—	—	—	regular	—	—	—
Arterial Spin labeling	no	no	no	no	no	no	no	no

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POST PROCESSING

Scan Description	Survey Brain	AXIAL T1 +C	AXIAL T2 Fat Sat	AXIAL T2 FLAIR +C	Source DTI	SAGITTAL 3D T1	SAGITTAL 3D T2 FLAIR	SAGITTAL 3D T1 +C
Preparation phases	—	auto	auto	auto	auto	auto	auto	auto
Interactive F0	no	no	no	no	no	no	no	no
Quick Survey	default	default	default	default	default	default	default	default
B0 field map	no	no	no	no	no	no	no	no
MIP/MPR	no	no	no	no	no	no	no	no
SWIp	no	—	—	—	—	no	—	no
Images	M, (3) no	M, (3) no	M, (3) no	M, (3) no	M, (3) no	M, (3) no	M, (3) no	M, (3) no
Autoview image	M	M	M	M	M	M	M	M
Calculated images	(4) no	(4) no	(4) no	—	(4) no	(4) no	—	(4) no
Reference tissue	White matter	Grey matter	Grey matter	White matter	Grey matter	White matter	Grey matter	White matter
Recon compression	No	No	No	No	No	No	No	No
Preset window contrast	soft	soft	soft	soft	soft	soft	soft	soft
Reconstruction mode	immediate	real time	real time	real time	immediate	immediate	real time	immediate
Save raw data	no	no	no	no	no	no	no	no
Hardcopy protocol	no	no	no	no	no	no	no	no
Image filter	system default	system default	system default	system default	system default	system default	system default	system default
Uniformity correction	no	no	no	no	no	no	no	no
Geometry correction	default	default	default	default	default	default	default	default
Elliptical k-space shutter	—	—	—	—	—	default	default	default
EPI geometry correction	—	—	—	—	no	—	—	—
IF_info_seperator	—	1634755923	0	0	0	1634755923	1634755923	1634755923

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