

Neuro MR protokoly

1,5 Tesla

FN Motol

M. Žáčková

M. Kynčl

Philips
Achieva
1,5T



mozek - standard

Kontrast	orientace	čas
T1 SE	Sag	3:37
T2	Tra	4:36
T2 FLAIR	Tra	3:40
DWI	Tra	0:53
SWI	Tra	3:22
T1 IR	Cor	2:35
T2 TSE	Sag	3:25
T2 FFE	Tra	3:25
T2 3D Drive IAC	Tra	4:31
T2 Spair orbita	Cor	3:42

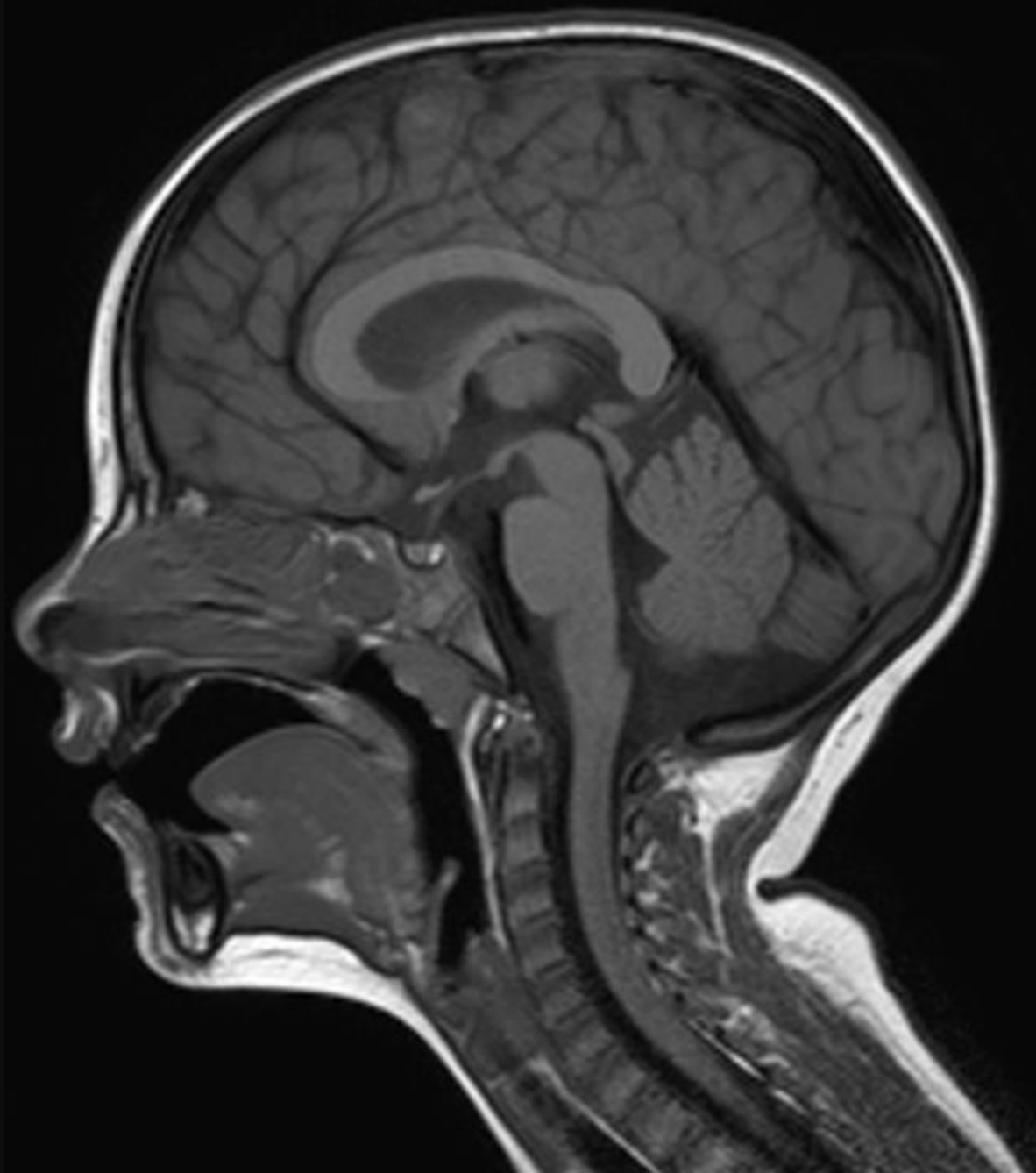
Option

8-kanálová hlavová cívka

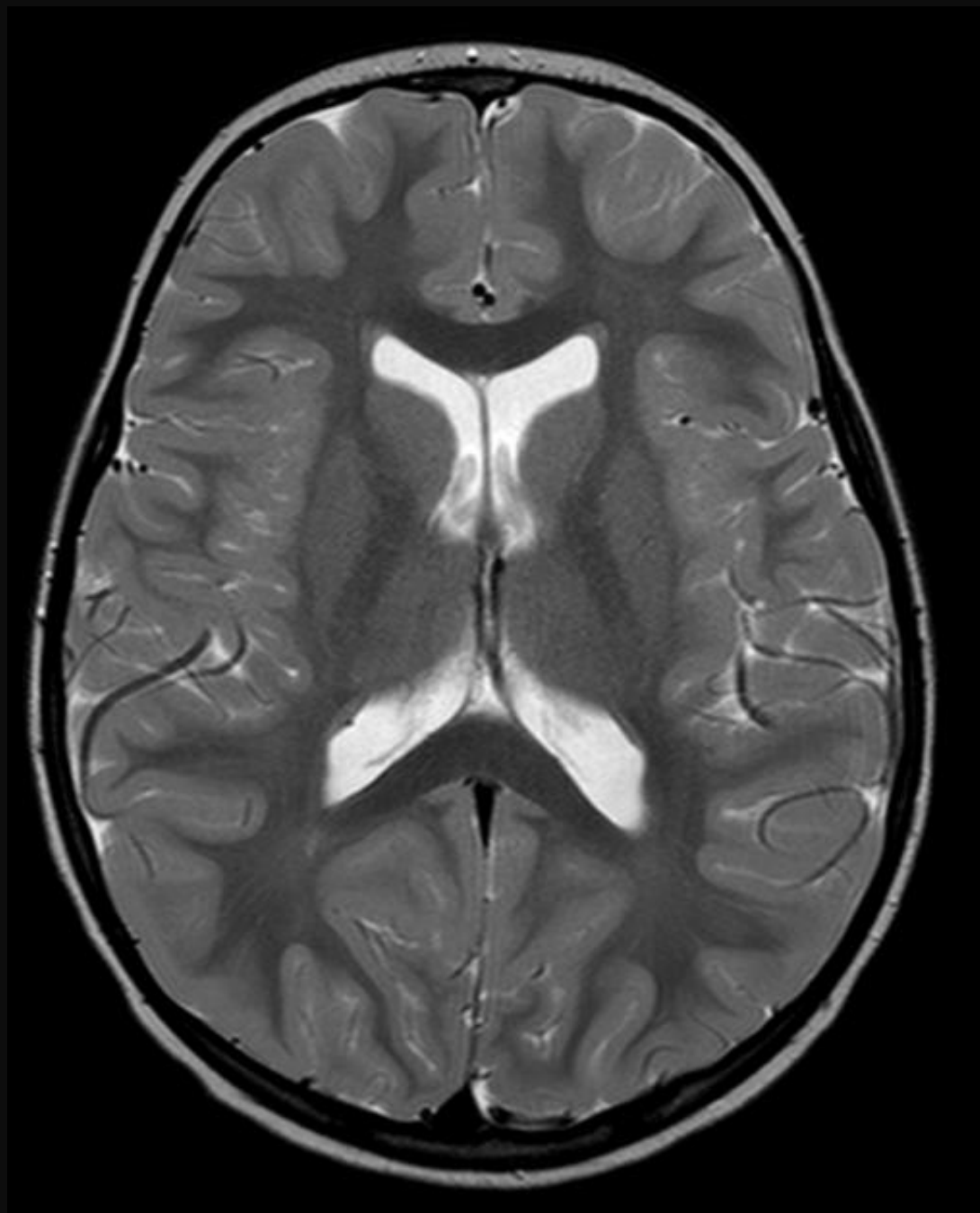
Kontrastní
látka

Kontrast	orientace	čas
T2	Tra	1:42
T2 FLAIR	Tra	3:18
DWI	Tra	1:06
T1 FFE	Tra	1:57
T1 3D GD	Sag	4:43
T1 FFE GD	Tra	1:57

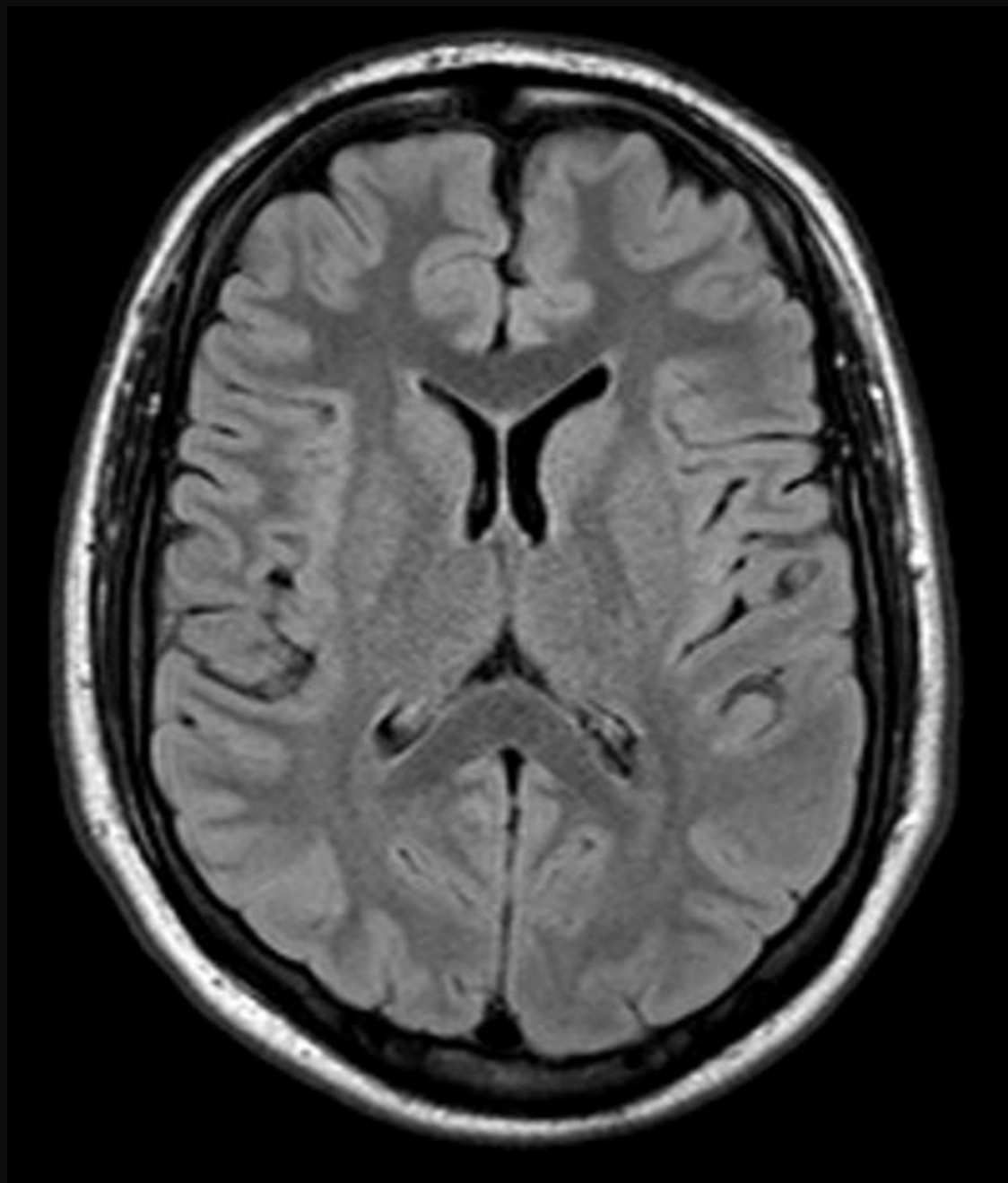
Typ	T1
Sekvence	SE
Rovina	SAG
Vrstva mm	4
FoV mm	230
Matrix	256 x 198
Fáze	AP
SENSE	off
TR ms	546
TE ms	13
Čas	3:37
Různé	NSA 2 Slices 23



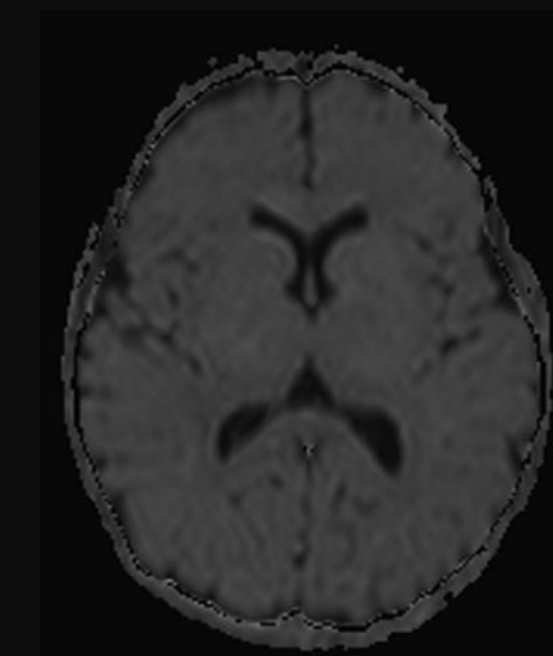
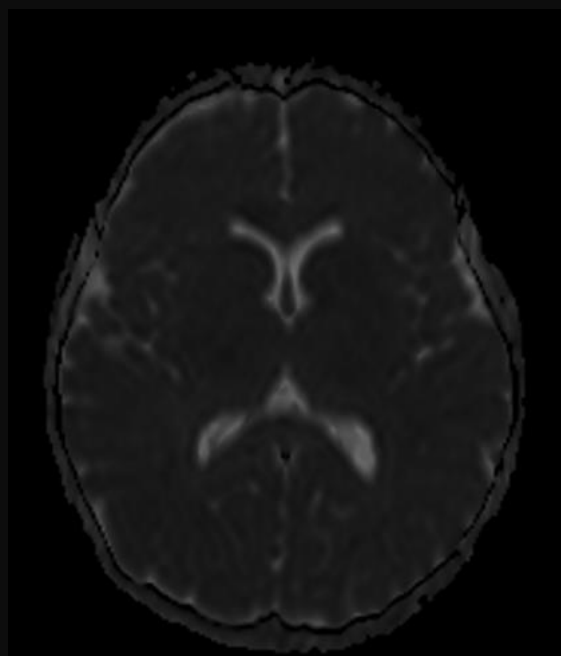
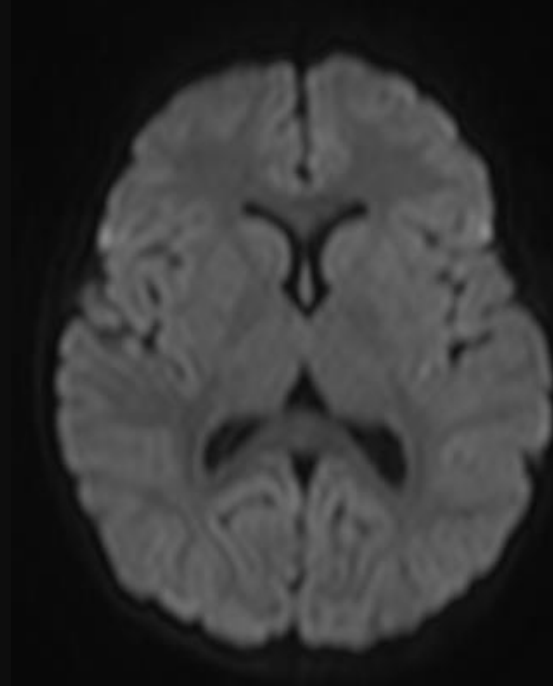
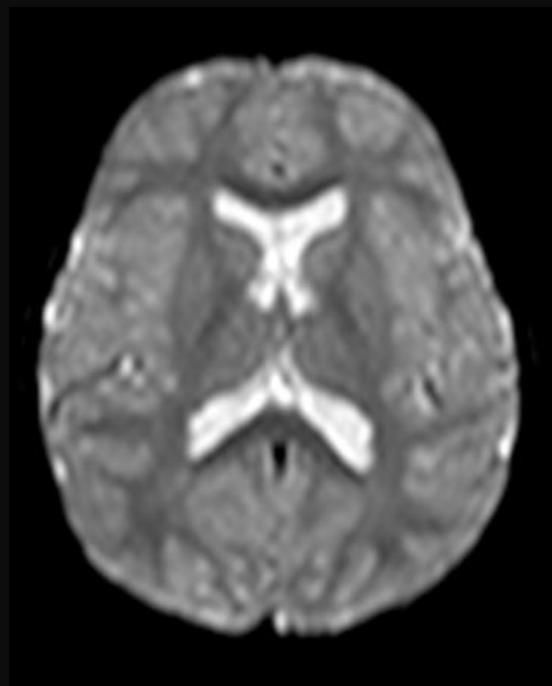
Typ	T2
Sekvence	TSE
Rovina	TRA
Vrstva mm	4
FoV mm	220
Matrix	400 x 240
Fáze	RL
SENSE	off
TR ms	5600
TE ms	100
TSE factor	15
Čas	4:36
Různé	NSA 3 Slices 28



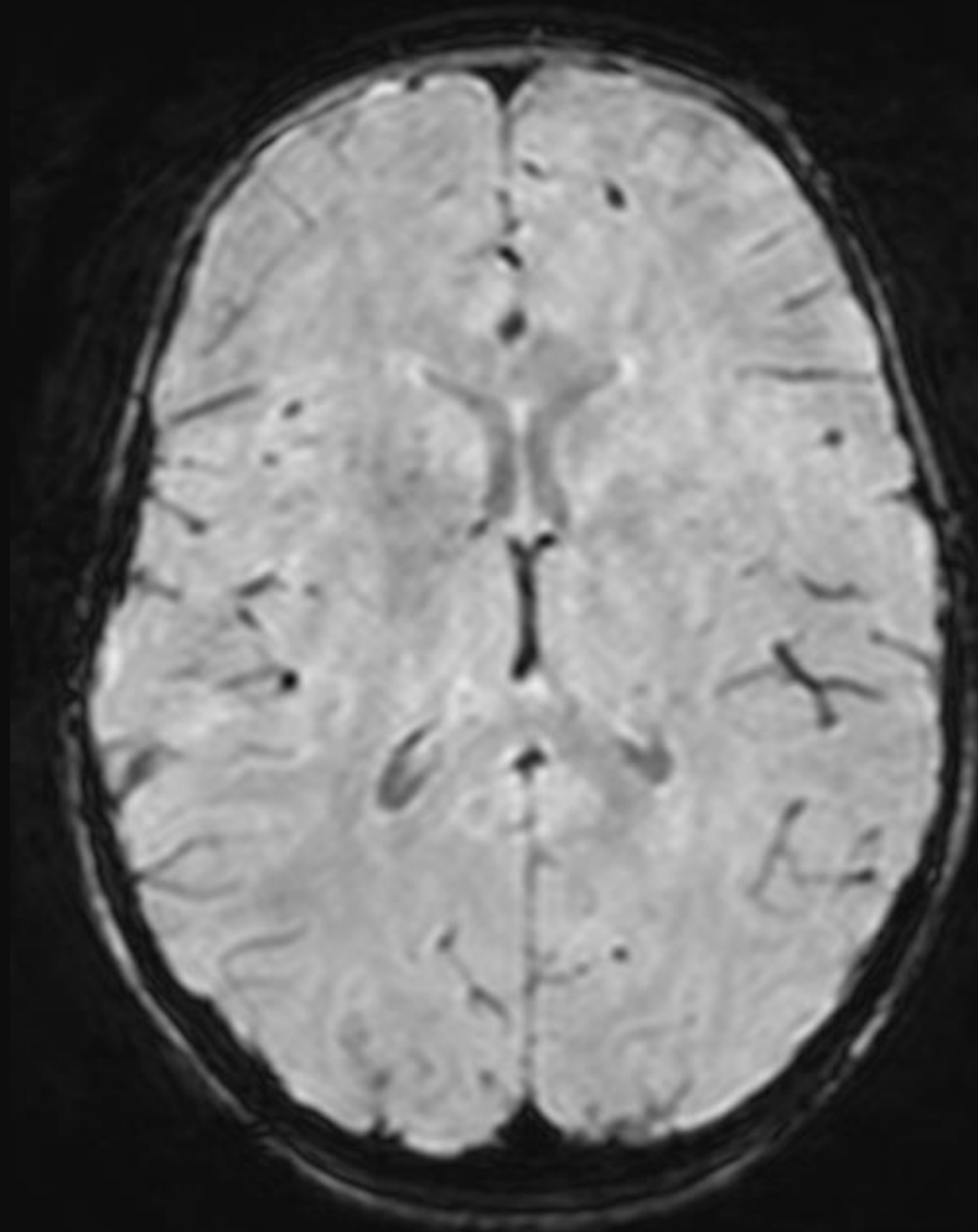
Typ	T2
Sekvence	FLAIR, TSE
Rovina	TRA
Vrstva mm	4
FoV mm	220
Matrix	256 x 106
Fáze	RL
SENSE	off
TR ms	11000
TE ms	140
TSE factor	53
Čas	3:40
Různé	NSA 2 TI 2800 ms Slices 28



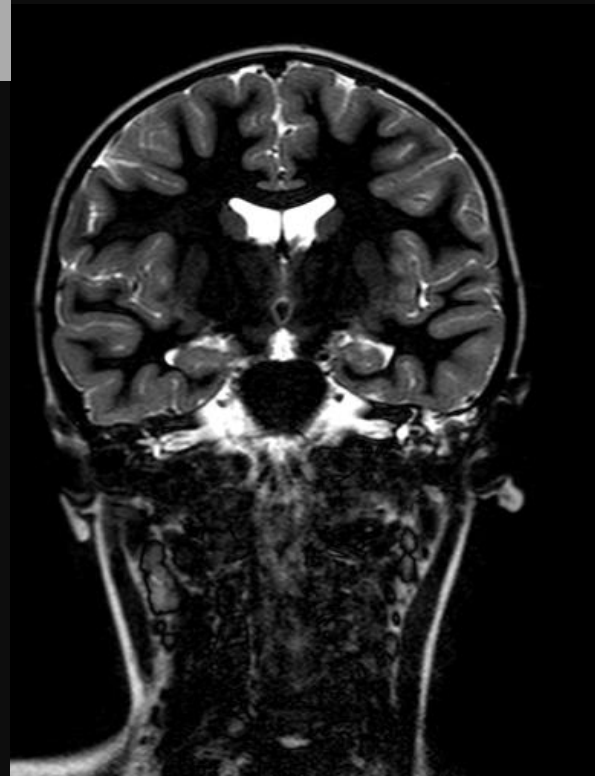
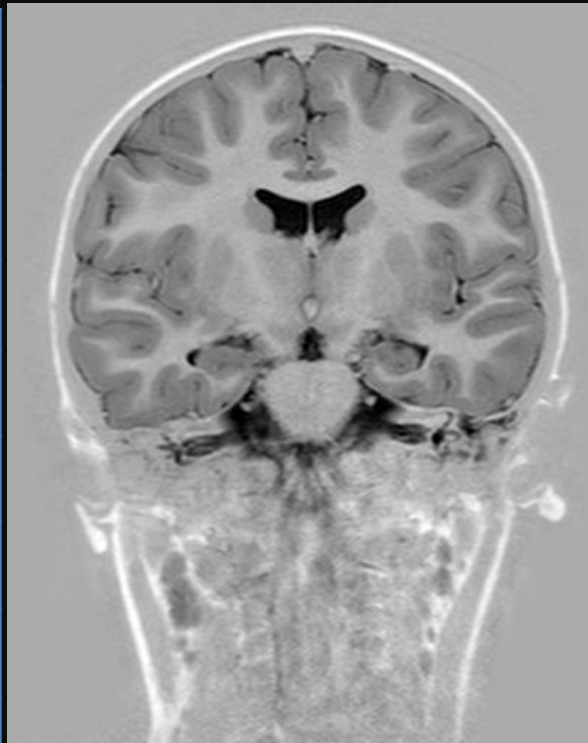
Typ	DW SSh
Sekvence	EPI
Rovina	TRA
Vrstva mm	4
FoV mm	230
Matrix	112 x 88
Fáze	AP
SENSE	1,2
TR ms	3500
TE ms	72
Čas	0:53
Různé	NSA 1 b factor 0, 1000 Slices 28



Typ	T1 3D (VenBold)
Sekvence	FFE, EPI
Rovina	TRA
Voxel size mm	1,2/1,2/1,2
FoV mm	230
Matrix	192 x 152
Fáze	RL
SENSE	1,5
TR ms	35
TE ms	50
Čas	3:22
Různé	NSA 1 Slices 110



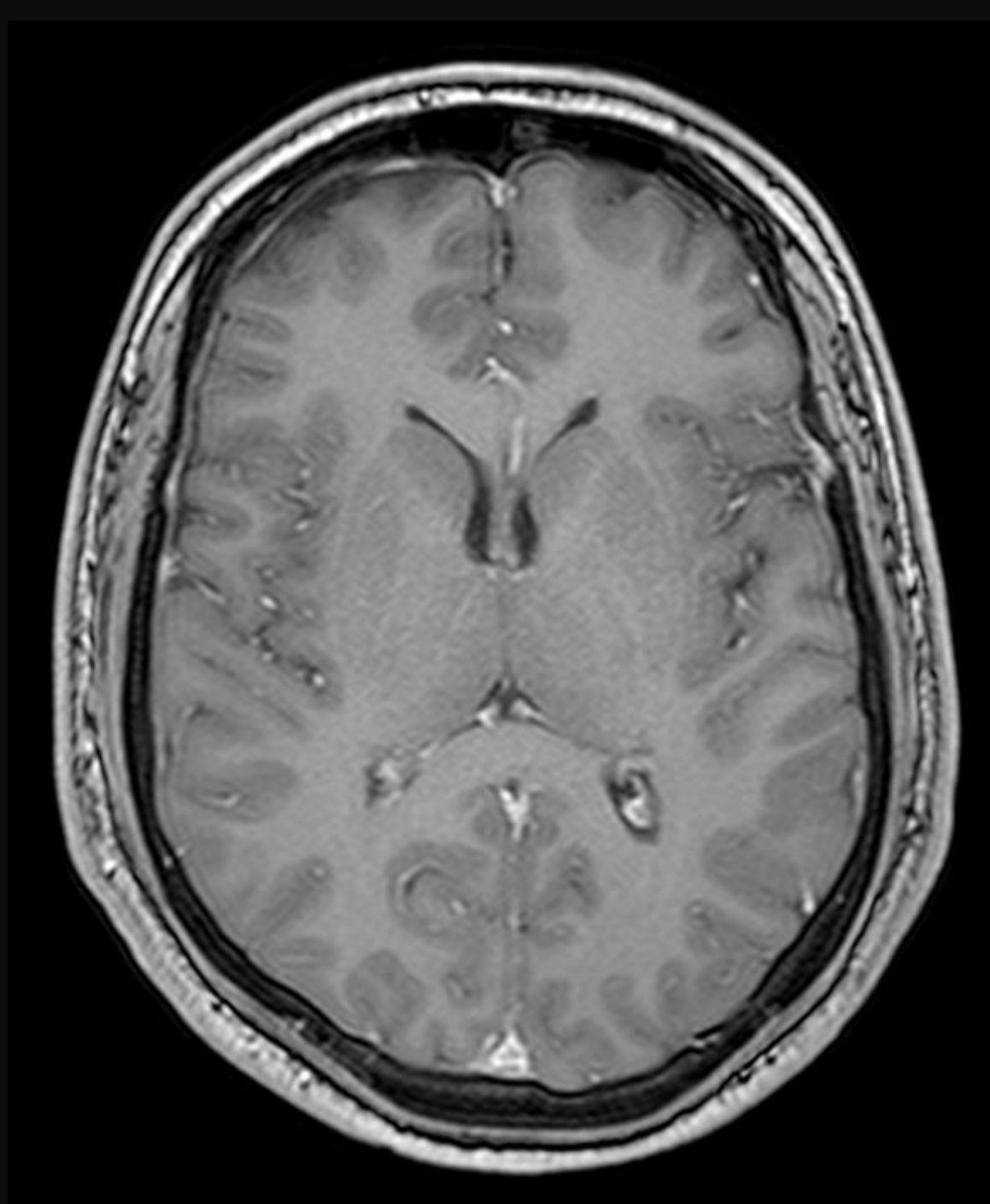
Typ	T1 IR
Sekvence	TSE
Rovina	COR
Vrstva mm	4,5
FoV mm	230
Matrix	320 x 166
Fáze	RL
SENSE	1,6
TR ms	5515
TE ms	15
TSE factor	8
Čas	2:35
Různé	NSA 2 TI 380 ms Slices 30 Reconstr.mode: phase - corrected (real IR), magnitude



Typ	T2
Sekvence	TSE
Rovina	SAG
Vrstva mm	4
FoV mm	230
Matrix	324 x 245
Fáze	AP
SENSE	off
TR ms	4100
TE ms	100
TSE factor	35
Čas	3:25
Různé	NSA 4 Slices 30



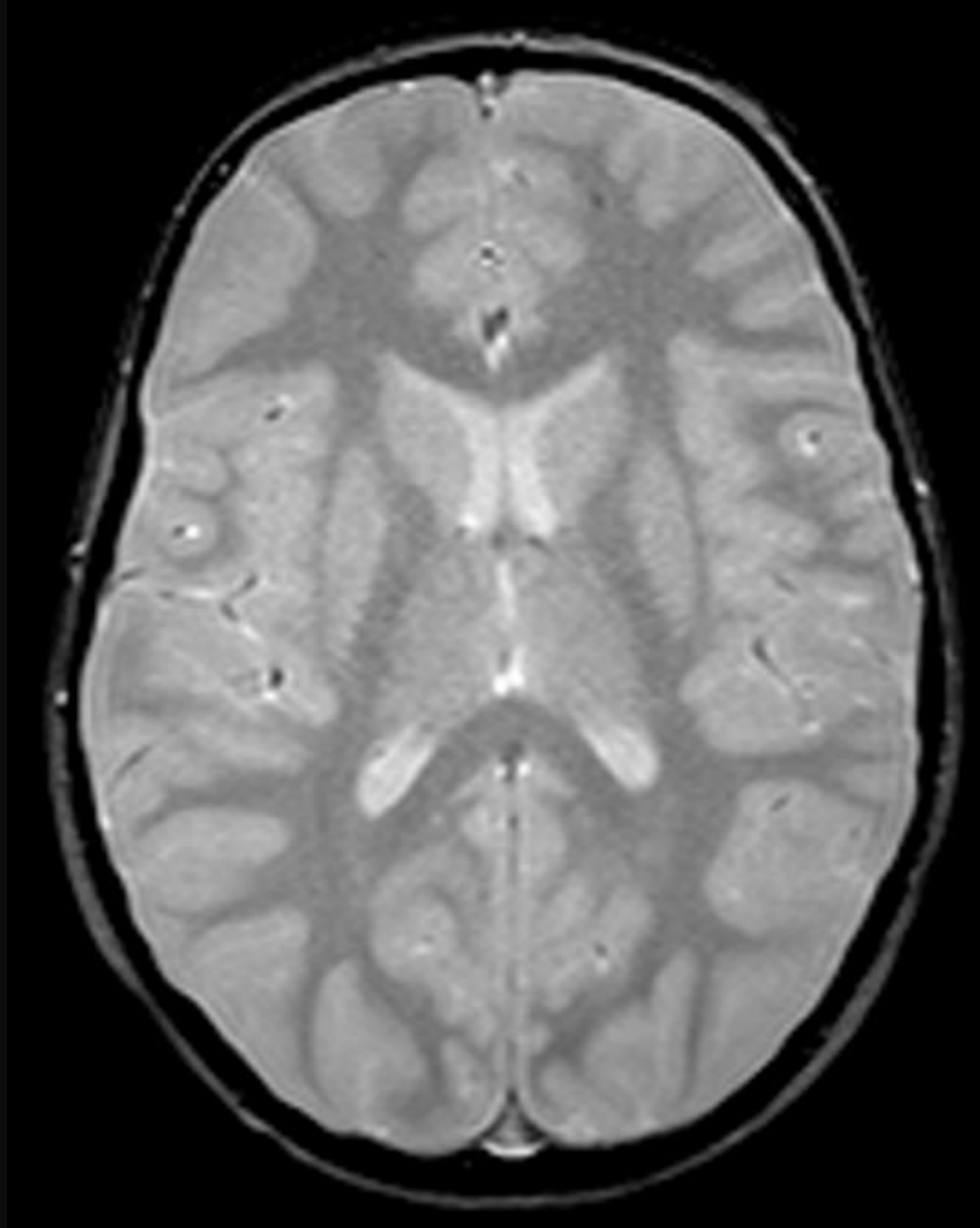
Typ	T1
Sekvence	FFE
Rovina	TRA
Vrstva mm	4
FoV mm	210
Matrix	232 x 150
Fáze	RL
SENSE	off
TR ms	195
TE ms	2
Čas	1:57
Různé	NATIV + KL NSA 4 Slices 30



Typ	T1 3D
Sekvence	TFE
Rovina	SAG
Voxel size mm	1,2/1,2/1,2
FoV mm	240
Matrix	200 x 200
Fáze	AP
SENSE	off
TR ms	7
TE ms	3,2
TFE factor	200
Čas	4:43
Různé	NSA 1 KL Slices 135

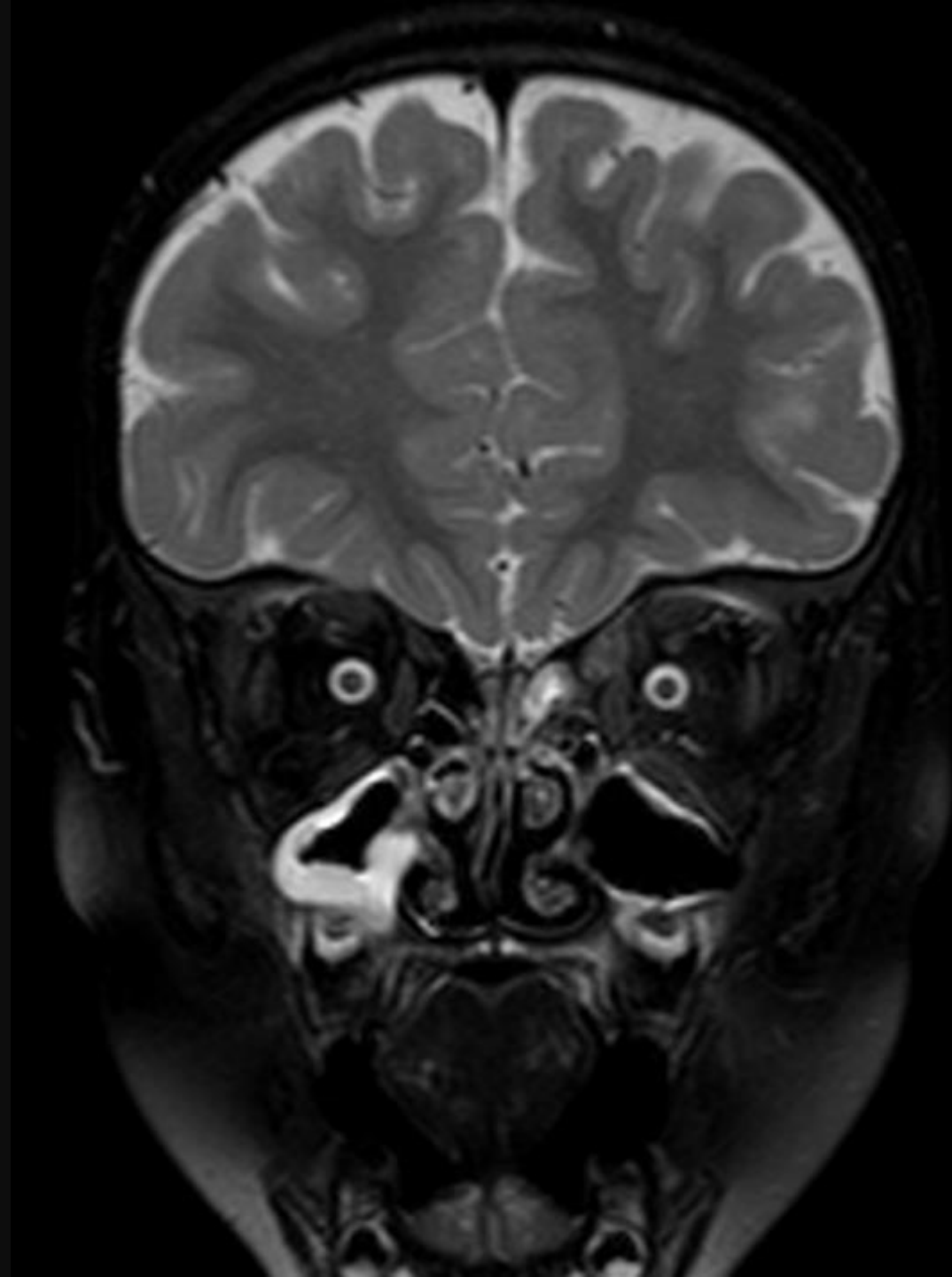


Typ	T2
Sekvence	FFE
Rovina	TRA
Vrstva mm	4
FoV mm	230
Matrix	256 x 163
Fáze	RL
SENSE	off
TR ms	690
TE ms	14
Čas	3:25
Různé	NSA 2 Flow compensation Slices 28

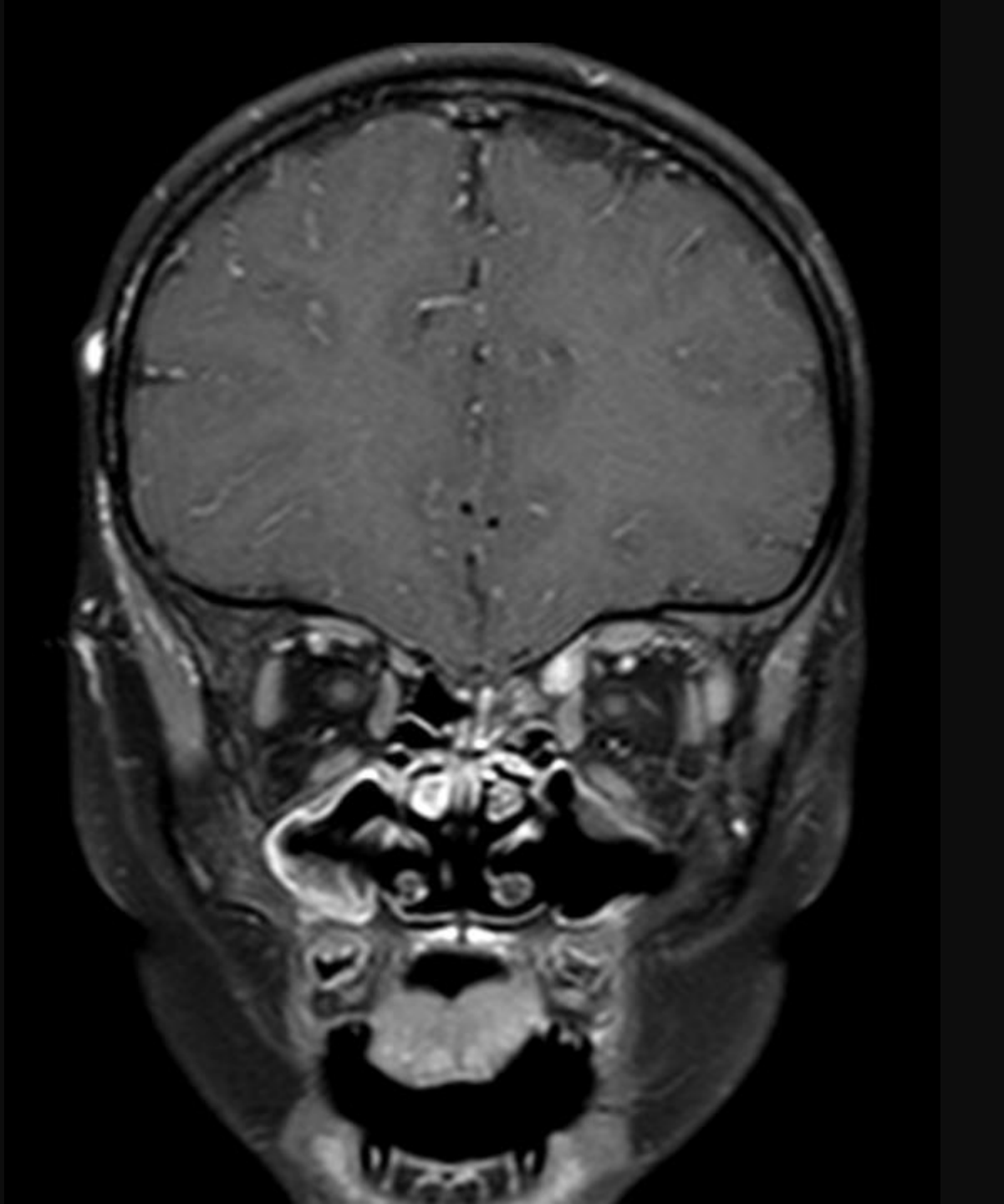


mozek - orbita

Typ	T2 SPIR
Sekvence	TSE
Rovina	COR
Vrstva mm	3
FoV mm	180
Matrix	224 x 153
Fáze	RL
SENSE	off
TR ms	3000
TE ms	100
TSE factor	17
Čas	3:42
Různé	NSA 4 Fat suppression Slices 26

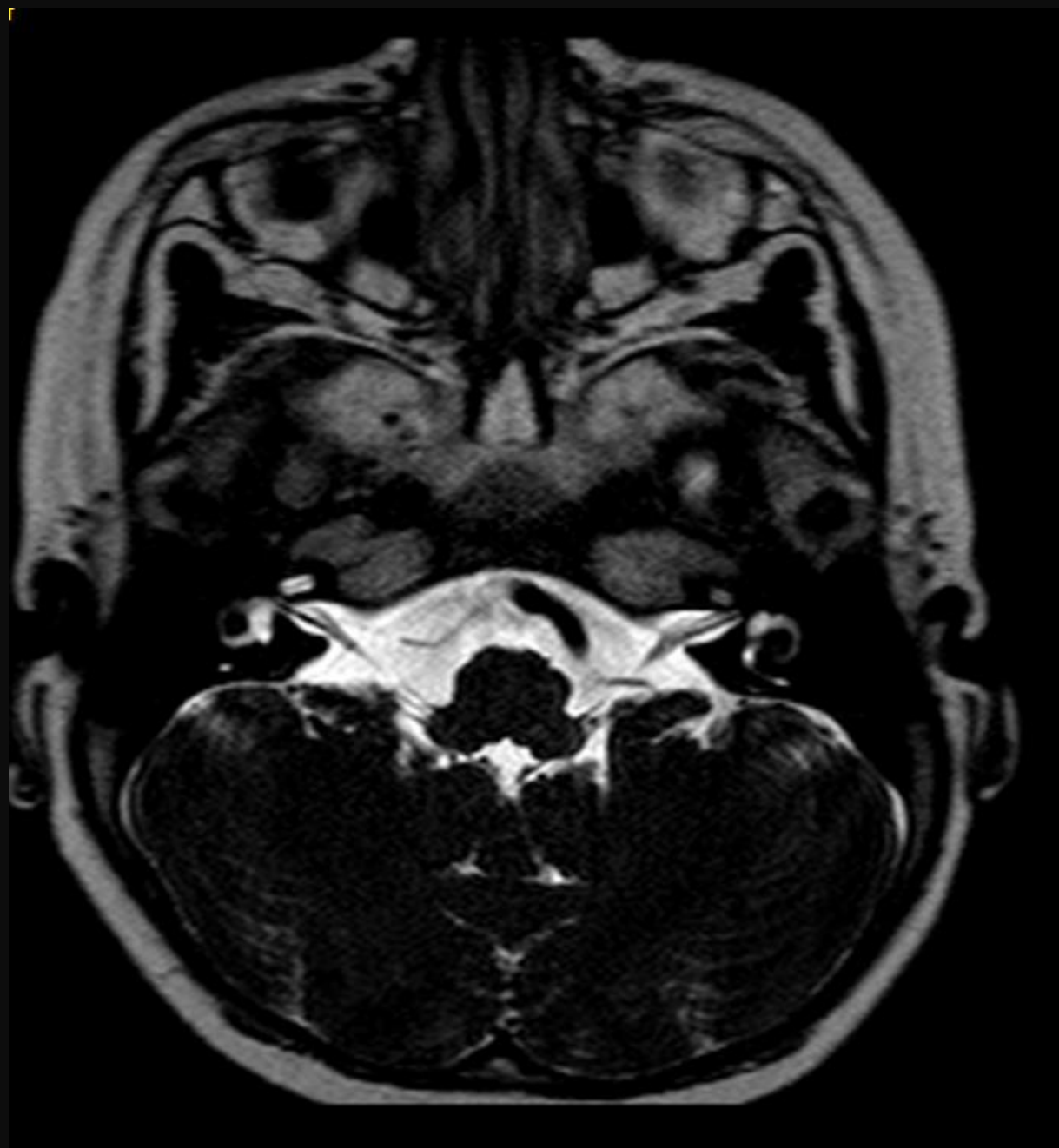


Typ	T1 SPIR
Sekvence	TSE
Rovina	COR
Vrstva mm	3
FoV mm	180
Matrix	200 x 148
Fáze	RL
SENSE	off
TR ms	590
TE ms	9
TSE factor	4
Čas	4:27
Různé	NSA 4 Fat suppression KL Slices 26



mozek - IAC - tok

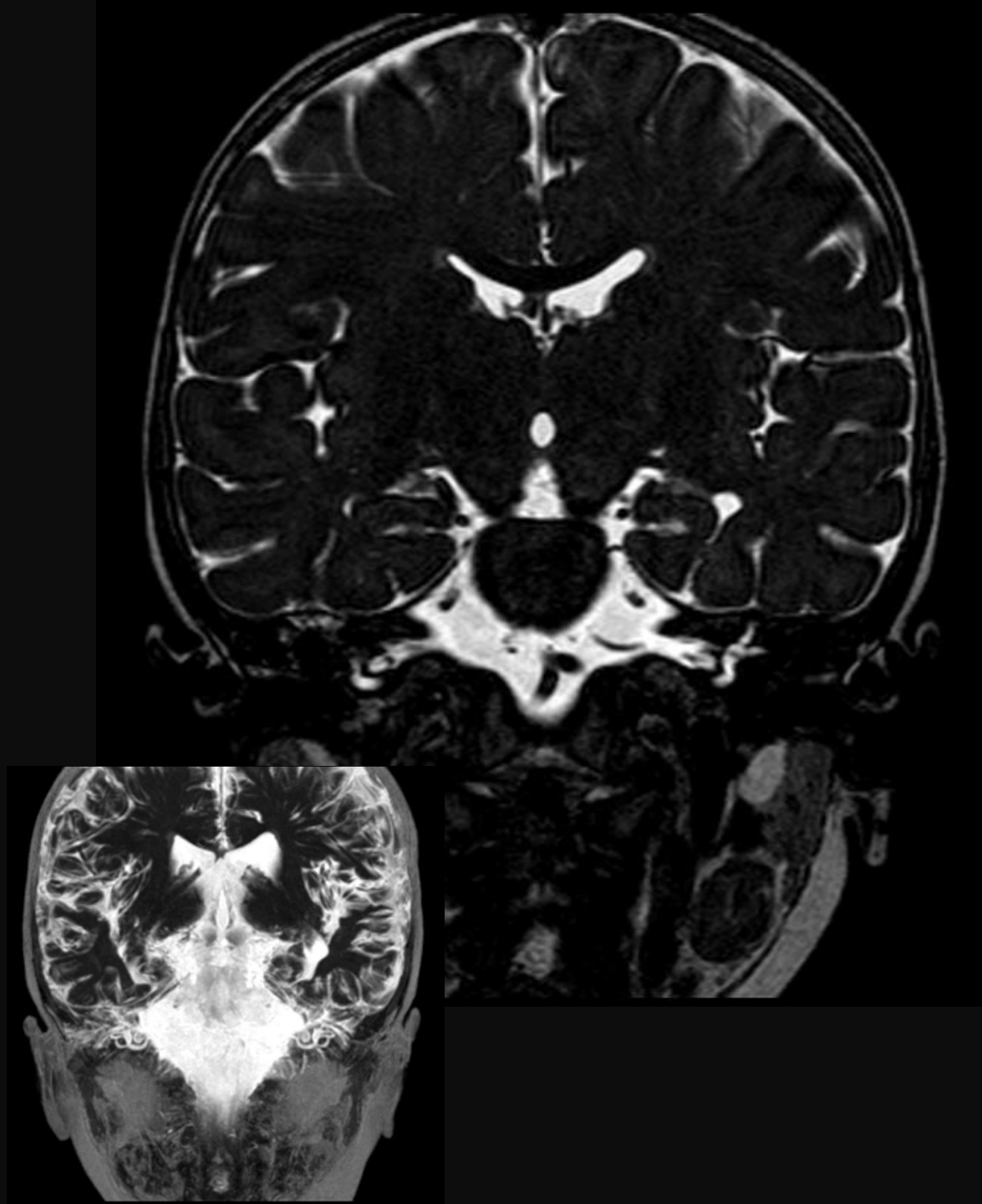
Typ	T2 3D
Sekvence	TSE
Rovina	TRA
Voxel size mm	0,5/0,6/0,7
FoV mm	130
Matrix	256 x 204
Fáze	RL
SENSE	off
TR ms	1500
TE ms	250
TSE factor	74
Čas	4:31
Různé	NSA 2 DRIVE Slices 50



Typ	T2 3D
Sekvence	TSE
Rovina	SAG
Voxel size mm	0,5/0,6/0,7
FoV mm	210
Matrix	412 x 306
Fáze	AP
SENSE	off
TR ms	1500
TE ms	250
TSE factor	74
Čas	2:07
Různé	NSA 2 DRIVE 15



Typ	VISTA
Sekvence	TSE
Rovina	COR
Voxel size mm	4
FoV mm	160
Matrix	316 x 246
Fáze	RL
SENSE	off
TR ms	1500
TE ms	221
TSE factor	74
Čas	3:52
Různé	NSA 2 Slices 50 Oversample f. 1,2

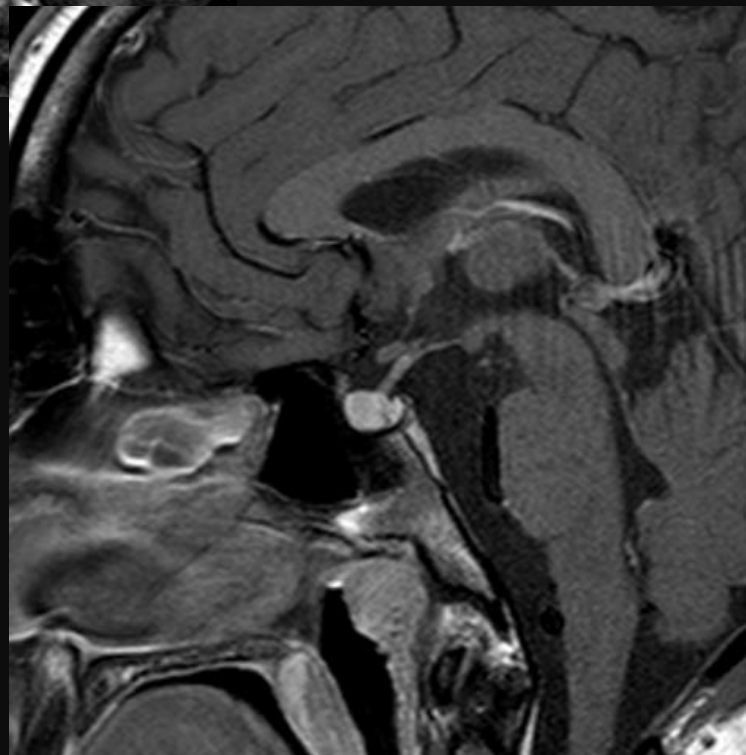
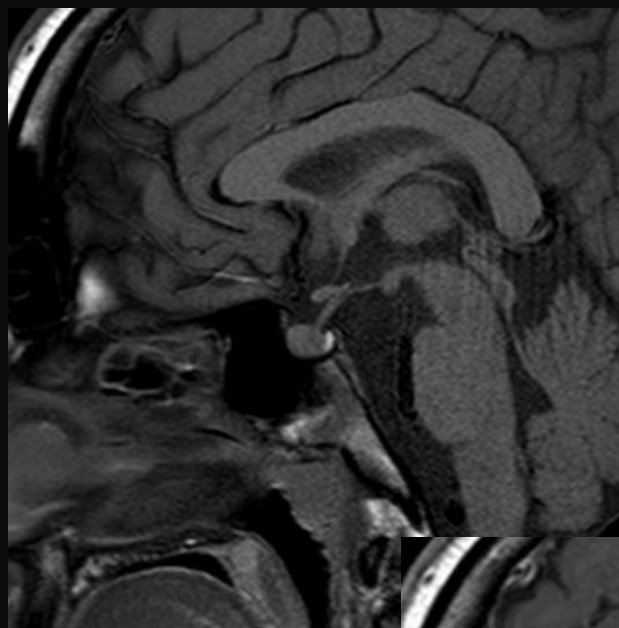


Hypofýza

8-kanálová HC

Kontrast	orientace	čas
T2	Tra	4:36
T2 FLAIR	Tra	3:40
DWI	Tra	0:53
T1	Sag	4:36
T2	Cor	2:07
T2	Sag	3:51
T1 dynamika	Cor	2:51 Dyn scan 4x
T1 GD	Sag	4:36
T1 FFE GD	Tra	1:57

Typ	T1
Sekvence	SE
Rovina	SAG
Vrstva mm	3
FoV mm	140
Matrix	208 x 166
Fáze	AP
SENSE	off
TR ms	550
TE ms	15
Čas	4:36
Různé	NSA 3 Slices 11



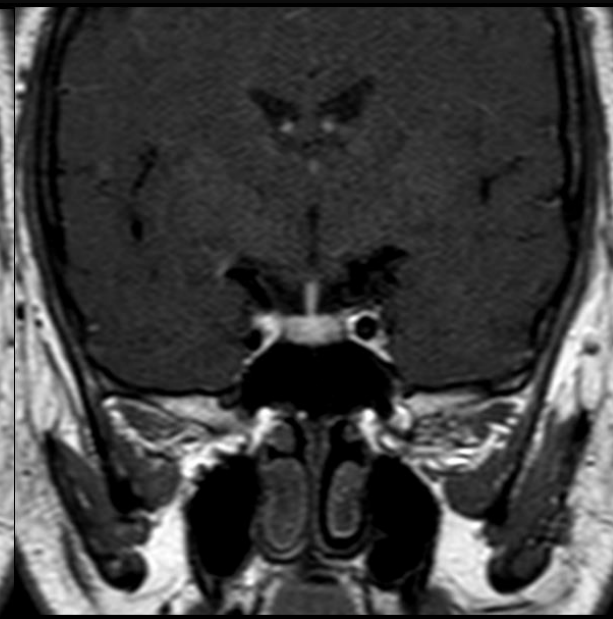
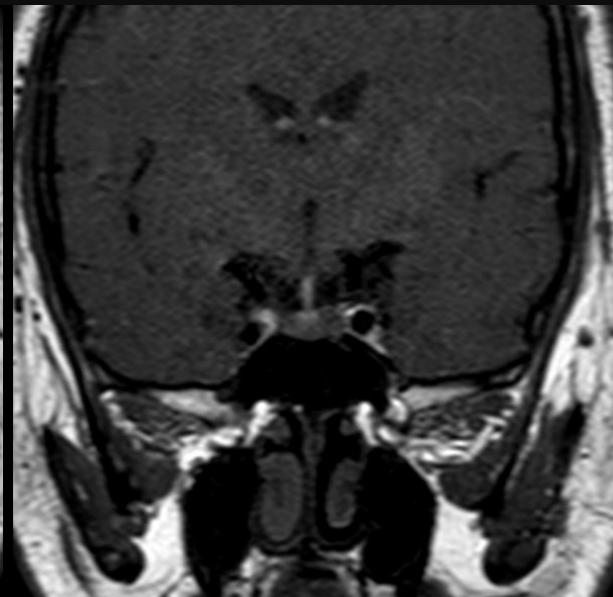
Typ	T2
Sekvence	TSE
Rovina	SAG
Vrstva mm	3
FoV mm	140
Matrix	208 x 161
Fáze	AP
SENSE	off
TR ms	3000
TE ms	120
TSE factor	17
Čas	3:51
Různé	NSA 8 Slices 11



Typ	T2
Sekvence	TSE
Rovina	COR
Voxel size mm	2
FoV mm	140
Matrix	200 x 153
Fáze	RL
SENSE	off
TR ms	3000
TE ms	120
TSE factor	17
Čas	2:07
Různé	NSA 6 Slices 7



Typ	T1 dynamika
Sekvence	TSE
Rovina	COR
Vrstva mm	2
FoV mm	150
Matrix	172 x 119
Fáze	RL
SENSE	off
TR ms	549
TE ms	10
TSE factor	7
Čas	2:51
Různé	Dyn scan 28" Dyn scan 4x NSA 3 Slices 7



Epilepsie

(cílený protokol)

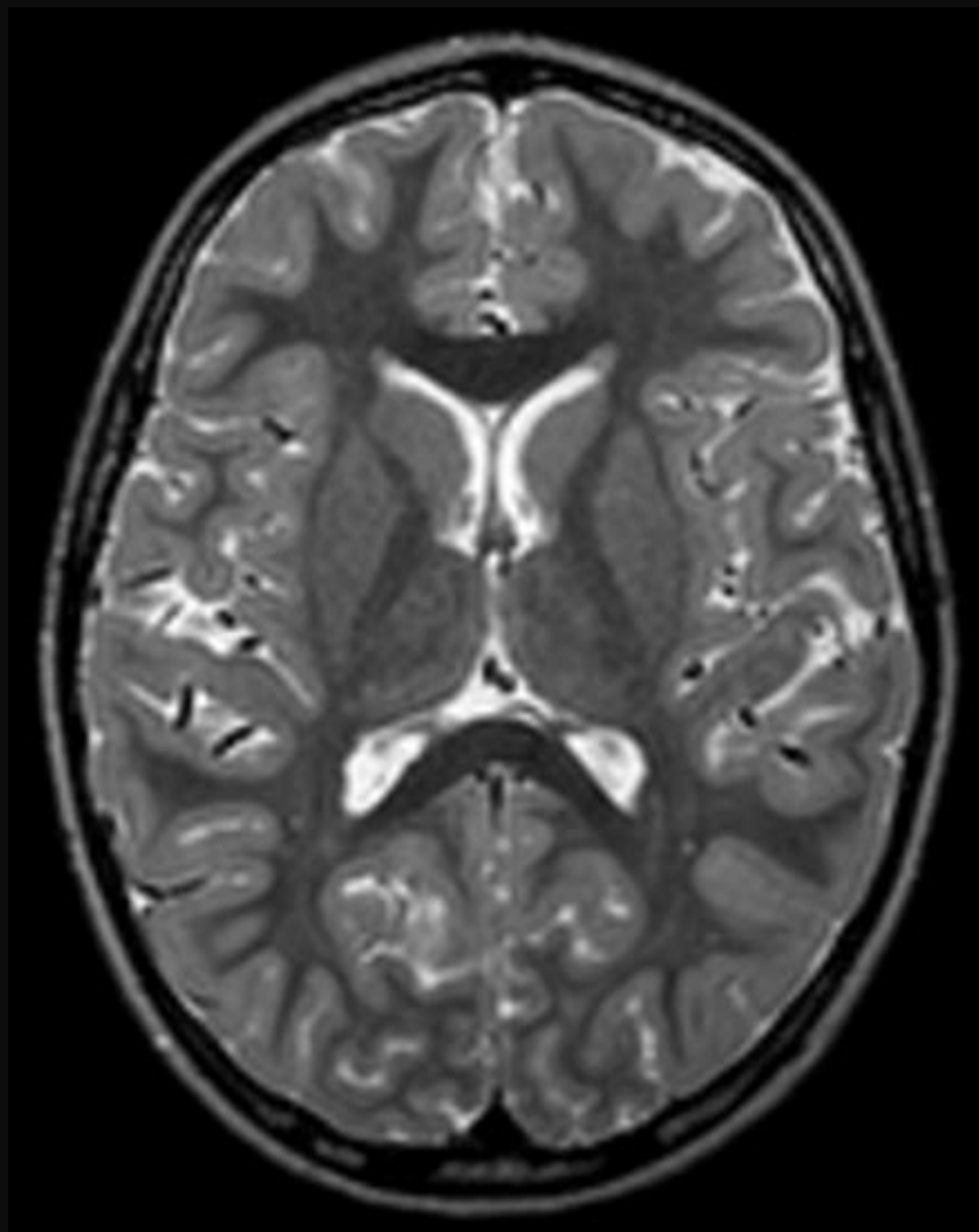
8-kanálová HC

Kontrast	orientace	čas
T1 SE	Sag	3:37
T2	Tra	4:36
T2 FLAIR	Tra	3:40
DWI	Tra	0:53
T2 3D	Tra	10:27
T2 3D	Cor	5:51
T2 FLAIR	Cor temp	5:08
T1 IR	Cor temp	2:14

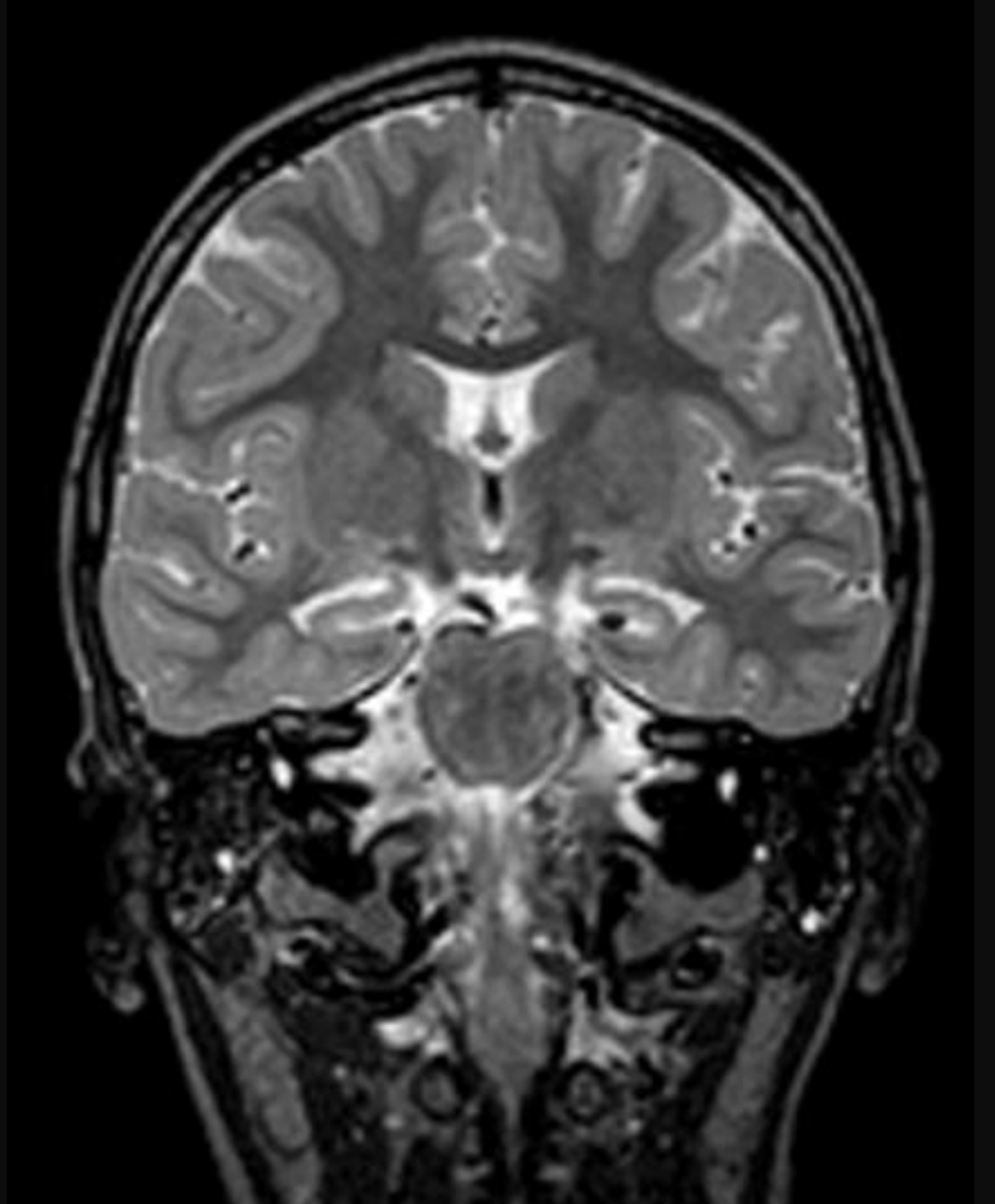
Typ	T1
Sekvence	SE
Rovina	SAG
Vrstva mm	4
FoV mm	230
Matrix	256 x 198
Fáze	AP
SENSE	off
TR ms	546
TE ms	13
Čas	3:37
Různé	NSA 2 Slices 23



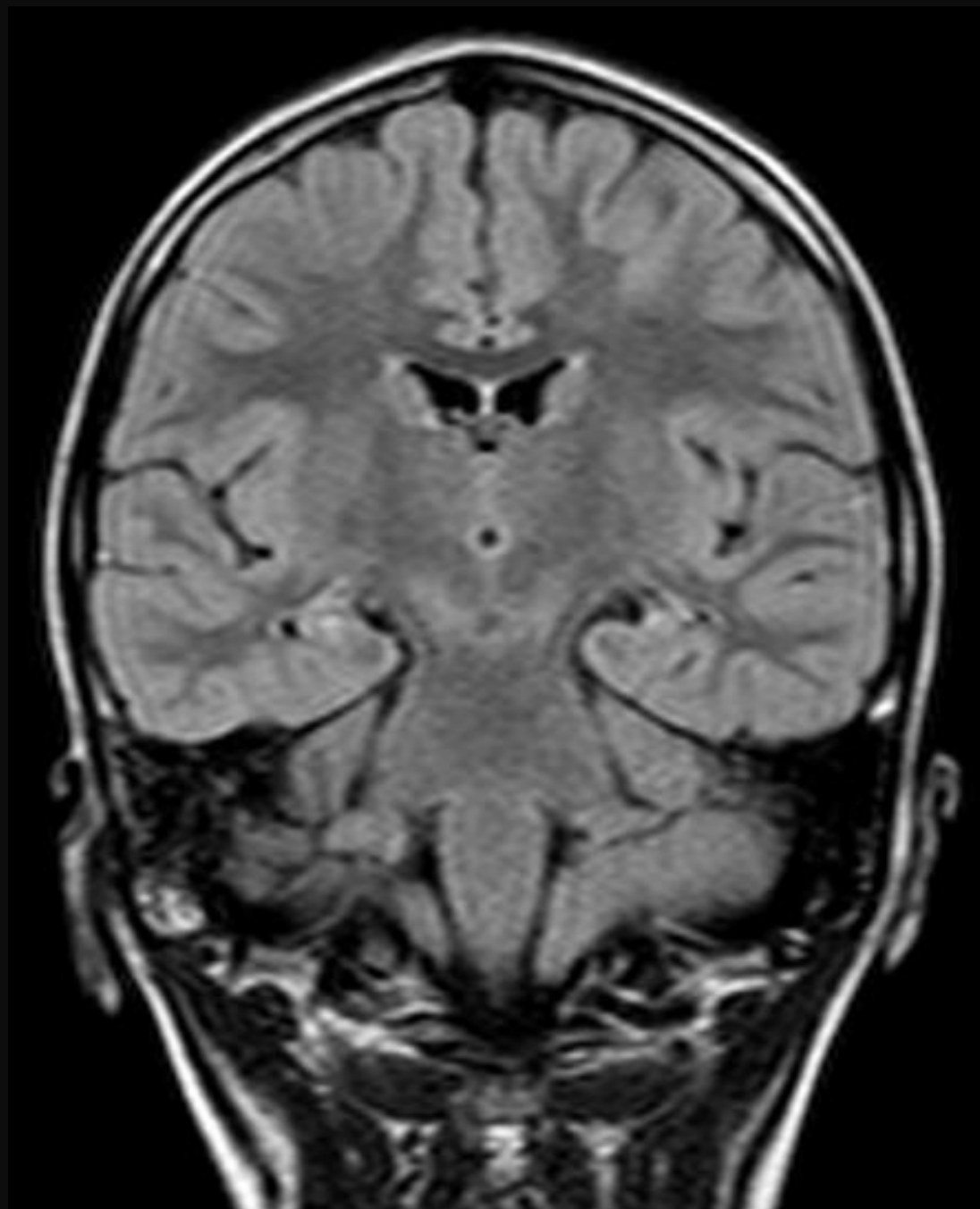
Typ	T2 3D
Sekvence	TSE
Rovina	TRA
Voxel size mm	1/1/1
FoV mm	230
Matrix	232 x 196
Fáze	RL
SENSE	2
TR ms	3000
TE ms	309
TSE factor	141
Čas	10:27
Různé	NSA 2 Slices 300



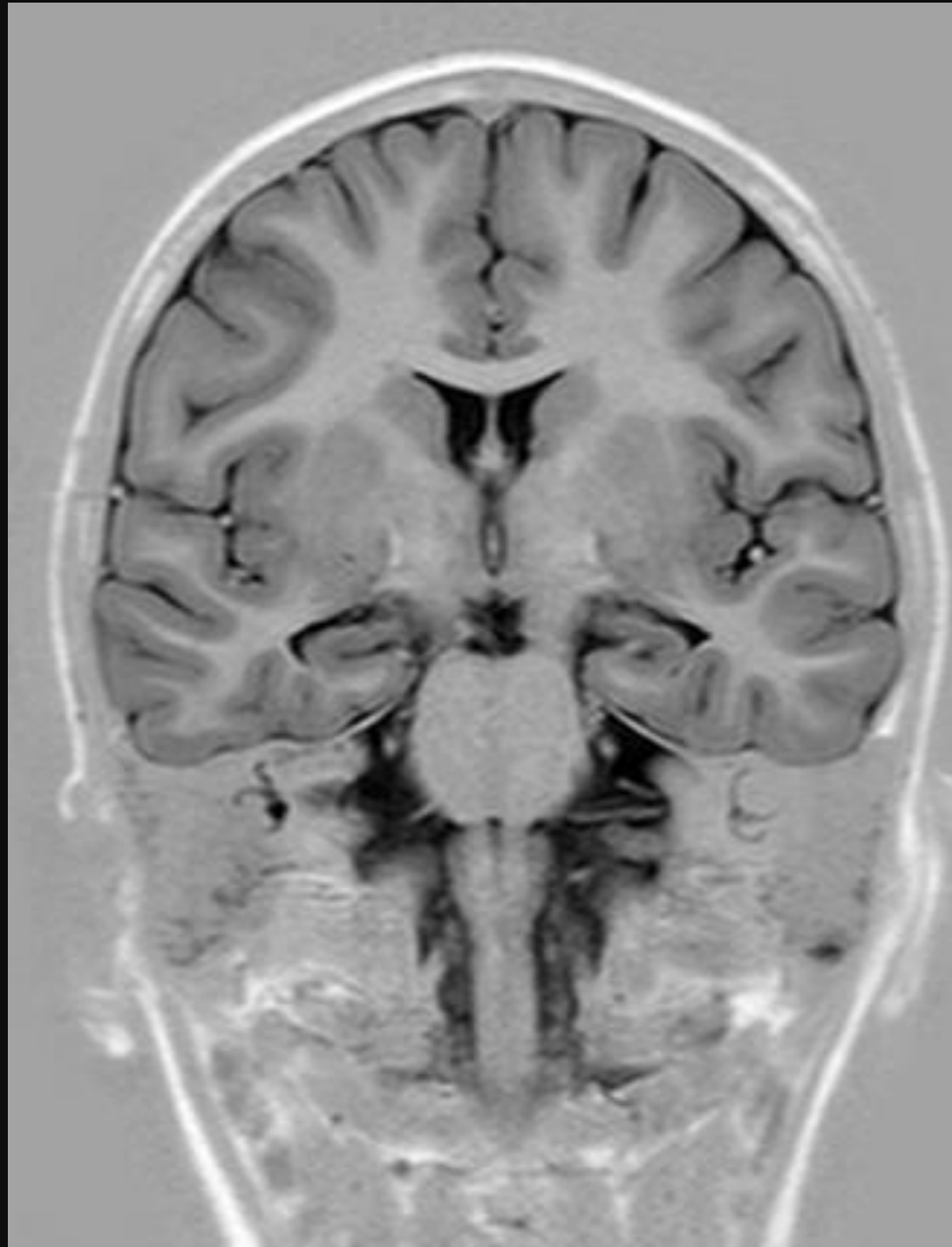
Typ	T2 3D
Sekvence	TSE
Rovina	COR
Voxel size mm	1/1/1
FoV mm	230
Matrix	232 x 196
Fáze	RL
SENSE	2
TR ms	3000
TE ms	303
TSE factor	141
Čas	5:51
Různé	NSA 2 Slices 170



Typ	T2
Sekvence	TSE, FLAIR
Rovina	COR
Vrstva mm	3,5
FoV mm	213
Matrix	236 x 150
Fáze	RL
SENSE	off
TR ms	11000
TE ms	140
TSE factor	50
Čas	5:08
Různé	NSA 2 TI 2800 ms Slices 40

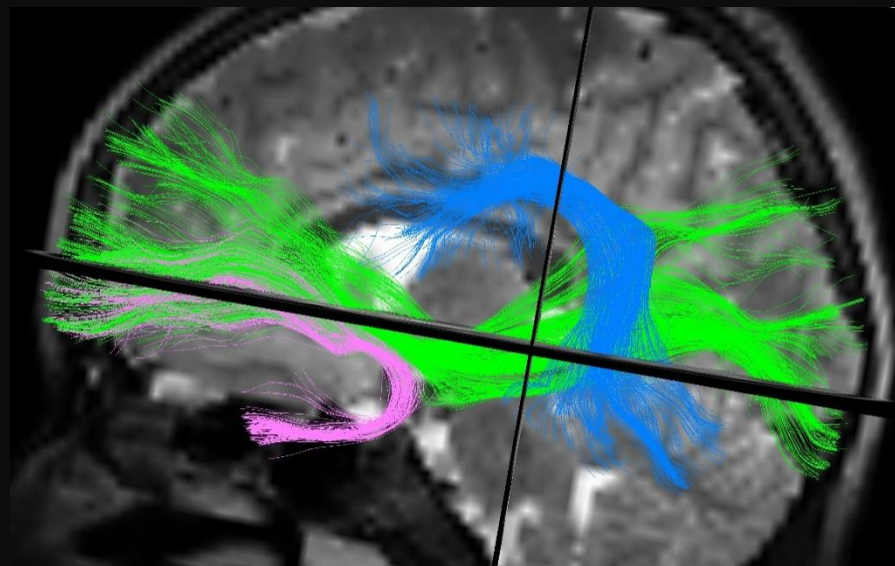
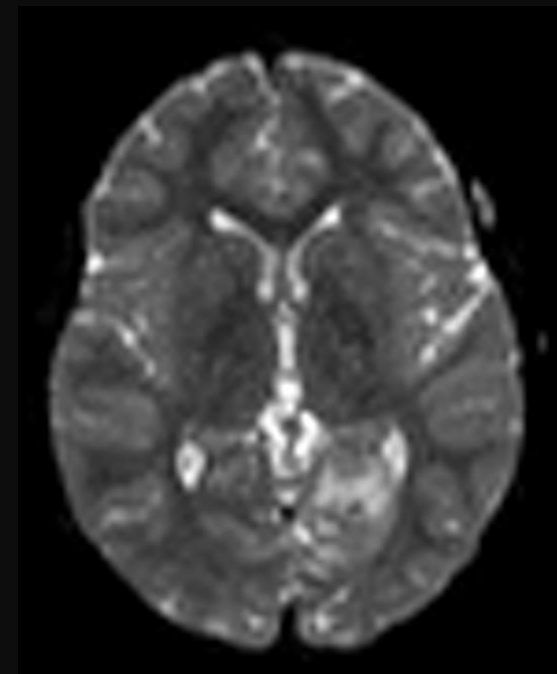
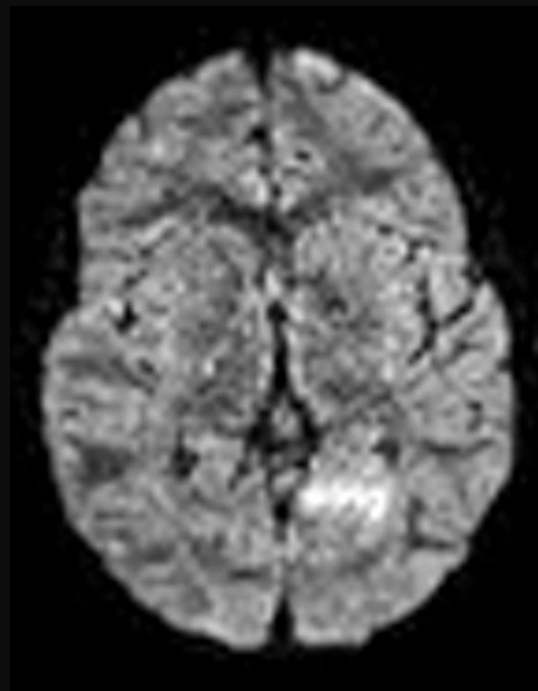


Typ	T1 IR
Sekvence	TSE
Rovina	COR
Vrstva mm	4
FoV mm	230
Matrix	320 x 153
Fáze	RL
SENSE	1,6
TR ms	5171
TE ms	15
TSE factor	8
Čas	2:14
Různé	NSA 2 TI 380 ms Slices 28 Reconstr.mode: phase - corrected (real IR), magnitude

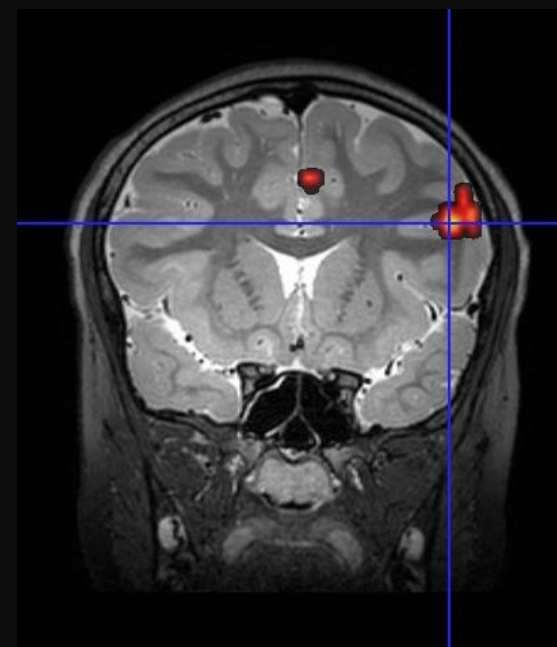
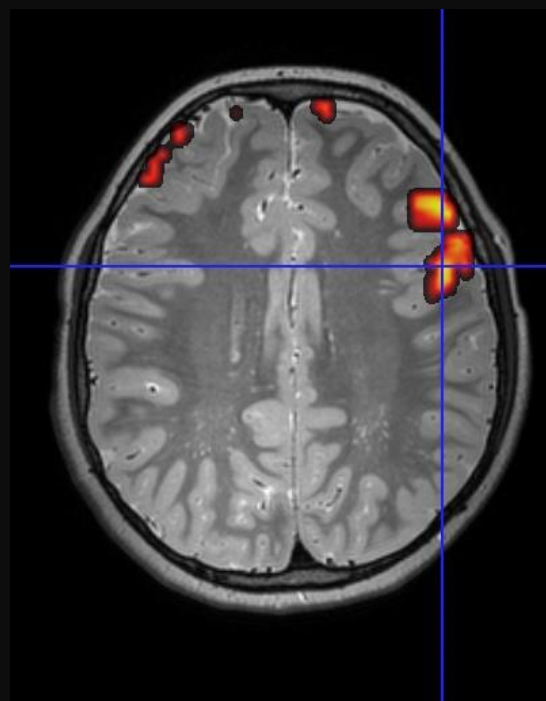
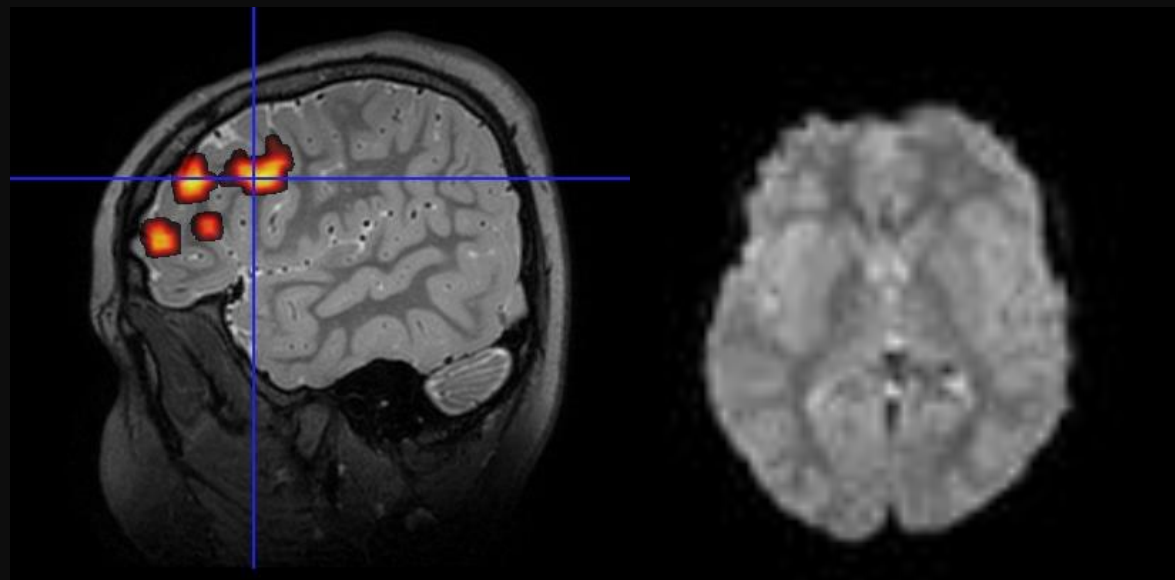


mozek – DTI, fMRI

Typ	DTI
Sekvence	EPI
Rovina	TRA
Vrstva mm	2
FoV mm	230
Matrix	112 x 110
Fáze	AP
SENSE	2
TR ms	9490
TE ms	80
Čas	5:13
Různé	NSA 2 Directional resolution: medium (16) Slices 75

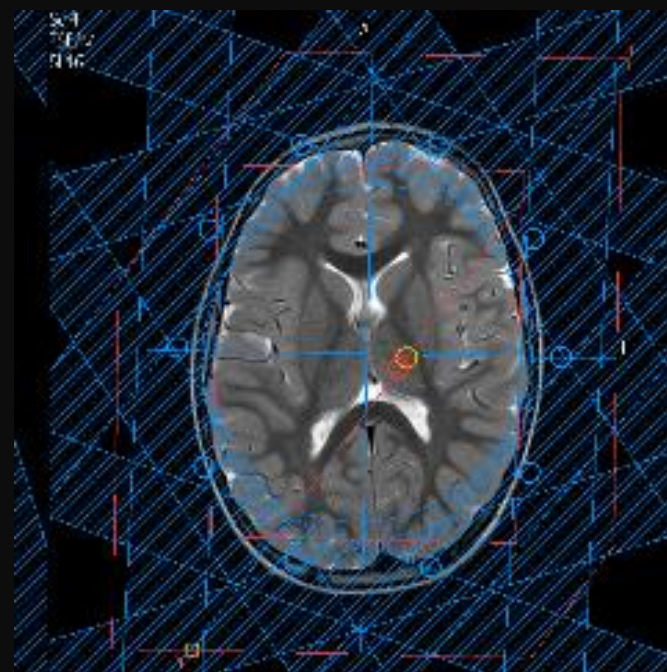
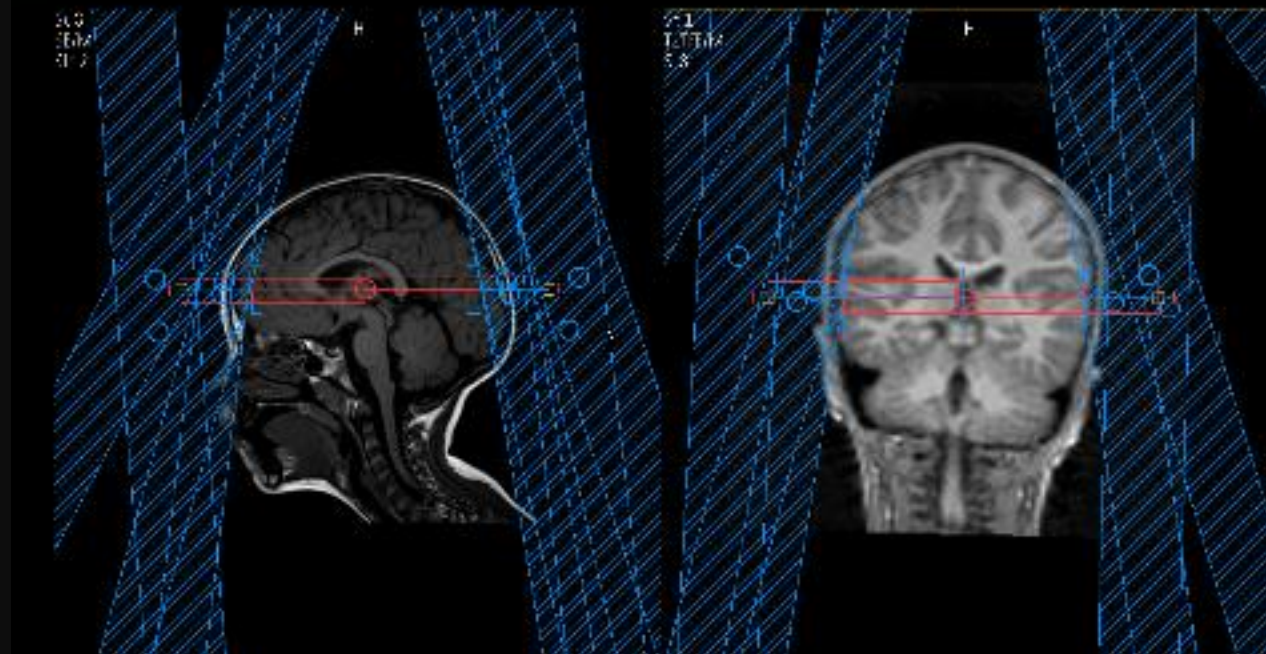


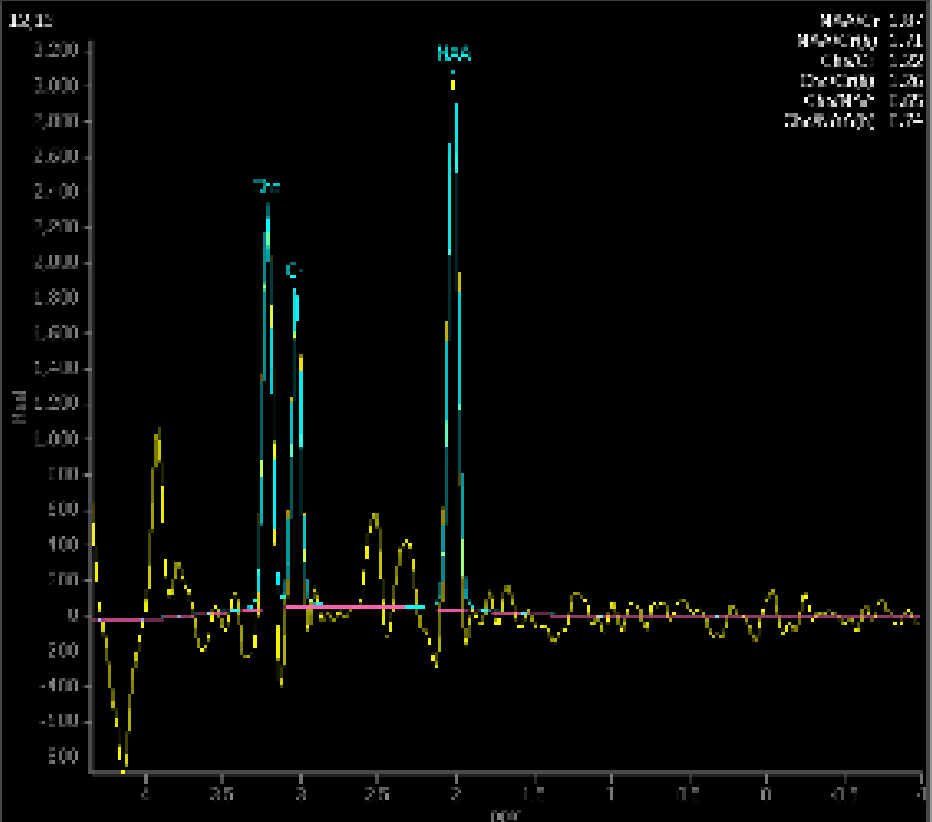
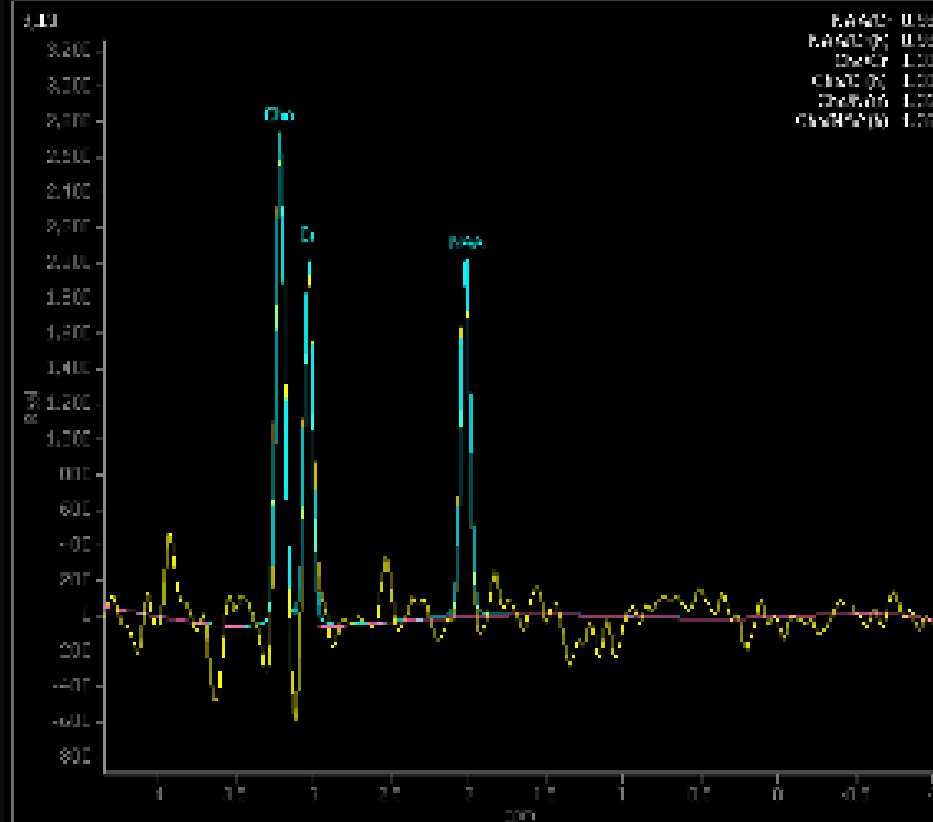
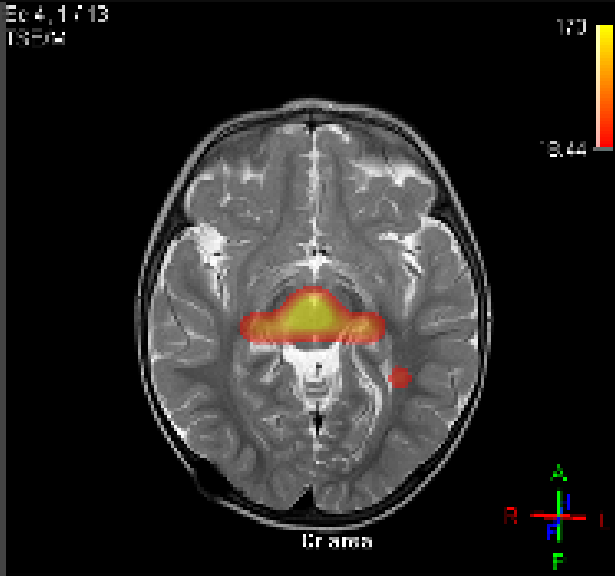
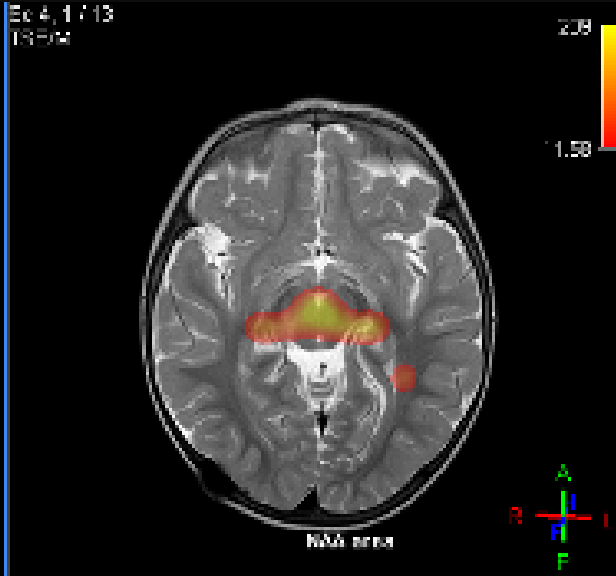
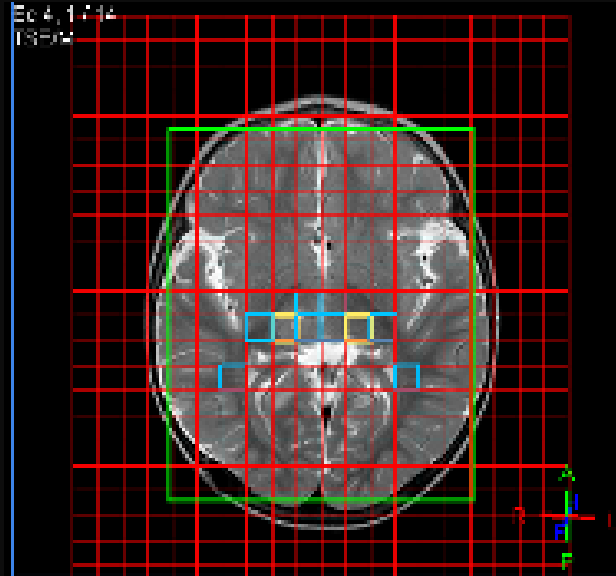
Typ	fMRI DWI
Sekvence	EPI
Rovina	TRA
Vrstva mm	3
FoV mm	208
Matrix	68 x 65
Fáze	RL
SENSE	1,6
TR ms	3000
TE ms	50
Čas	6:15
Různé	NSA 1 Slices 30 Gap 0 Spir



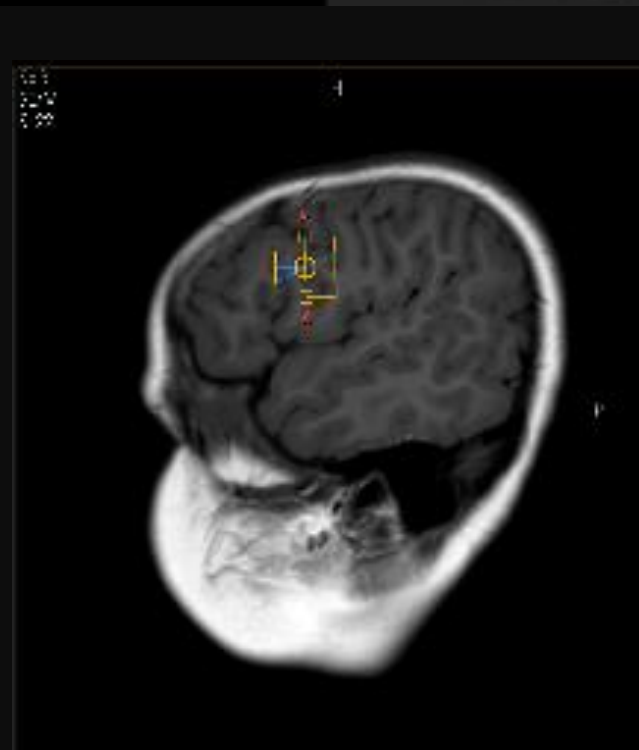
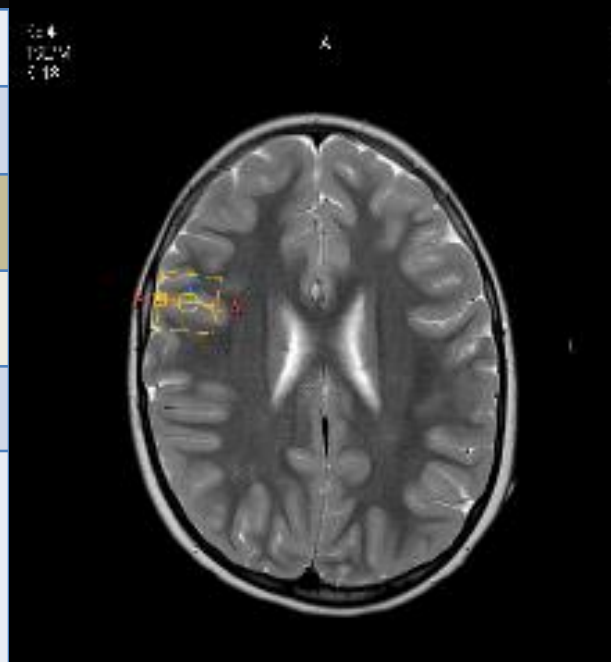
mozek - MRS

Typ	2D press 144
Rovina	TRA
Vrstva mm	15
FoV mm	230
SENSE	2
TR ms	2000
TE ms	144
Čas	5:52
Různé	

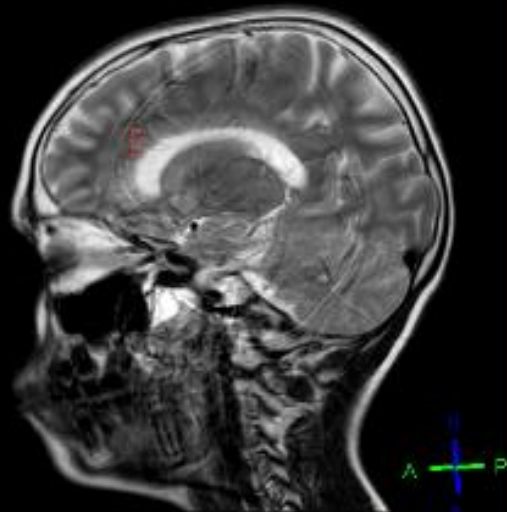




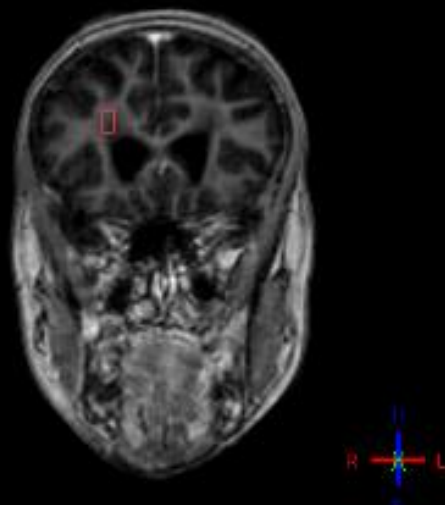
Typ	SV PRESS 144
Voi size mm	20/20/20
TR ms	2000
TE ms	144
Čas	4:52
Různé	



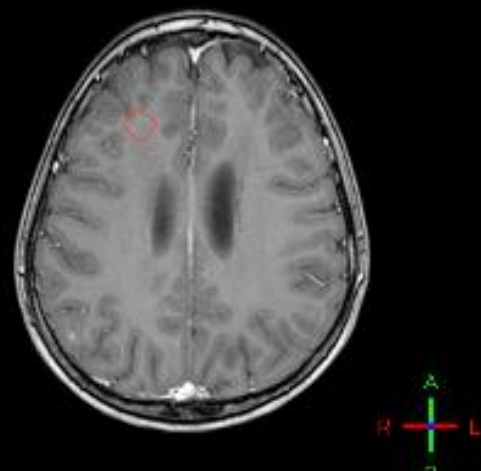
Sc 3, 1 / 19
TSE/M



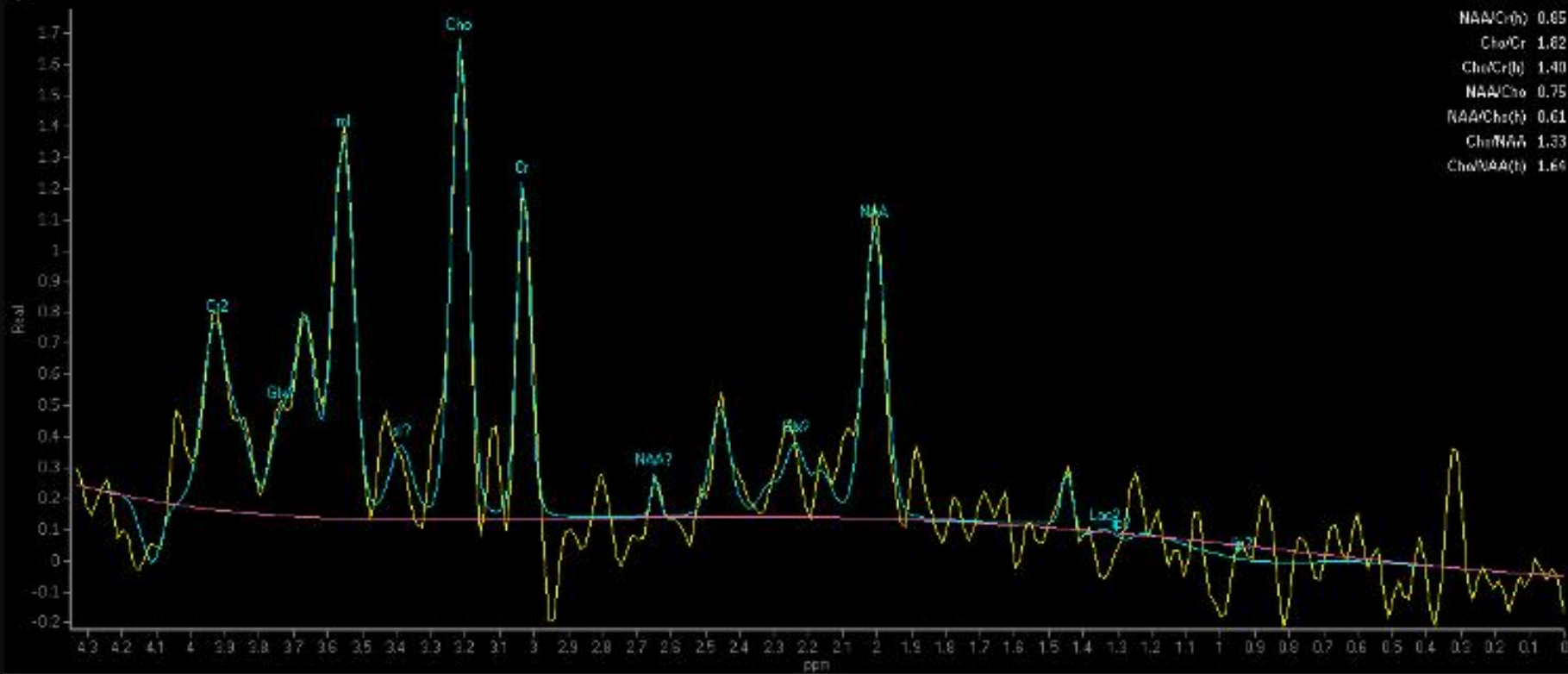
Sc 8, 3 / 19
TITFE/M



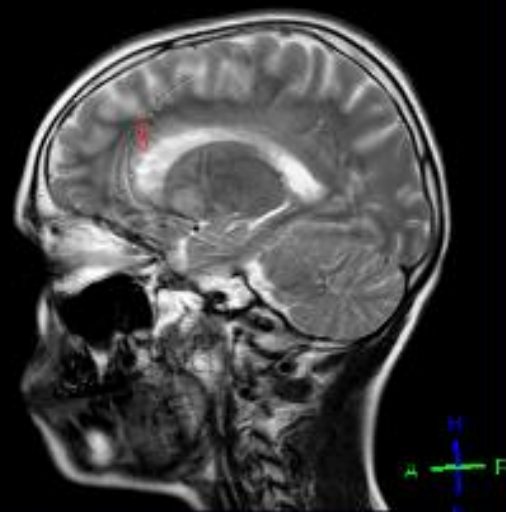
Sc 8, 1 / 22
FFE/M



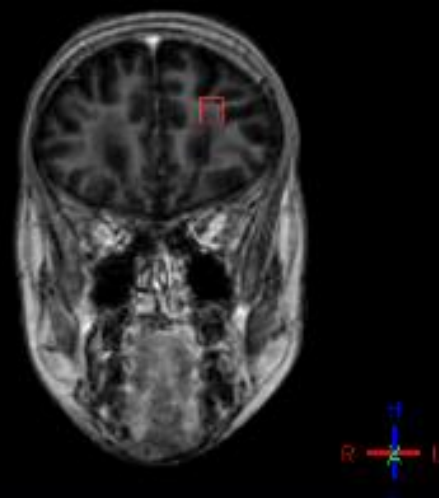
1.1



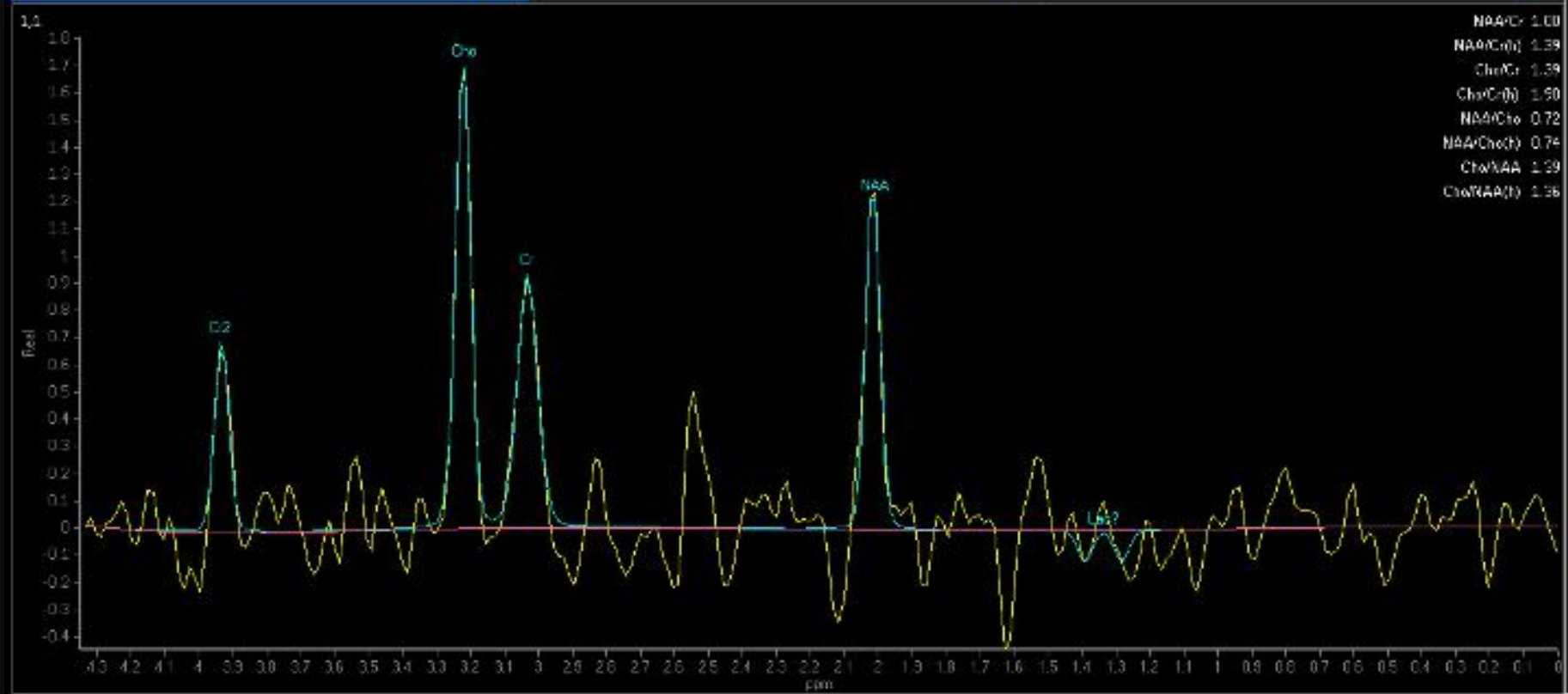
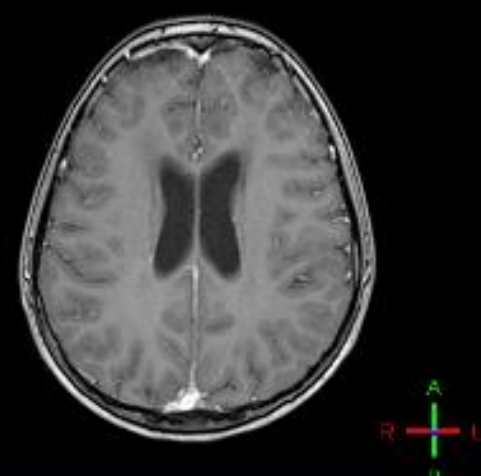
Sc 3, 1 / 11
TSE/M



Sc 9, 3 / 17
T1/FEM



Sc 8, 1 / 21
FFEM



C páteř

C páteř

16-kanálová Spine coil

Kontrast	orientace	čas
T2	Sag	3:36
T1	Sag	3:21
STIR	Sag	5:45
T2	Tra	3:54
T1	Cor	2:14
Option		
T2 SPAIR	Sag	3:54
T1 GD	Tra	2:25

Typ	T2
Sekvence	TSE
Rovina	SAG
Vrstva mm	3
FoV mm	250
Matrix	176 x 200
Fáze	FH
TR ms	3000
TE ms	120
TSE factor	50
Čas	3:36
Různé	NSA 8 DRIVE Slices 12



Typ	T1
Sekvence	TSE
Rovina	SAG
Vrstva mm	3
FoV mm	250
Matrix	176 x 200
Fáze	FH
TR ms	400
TE ms	7,8
TSE factor	5
Čas	3:21
Různé	NSA 6 Slices 12



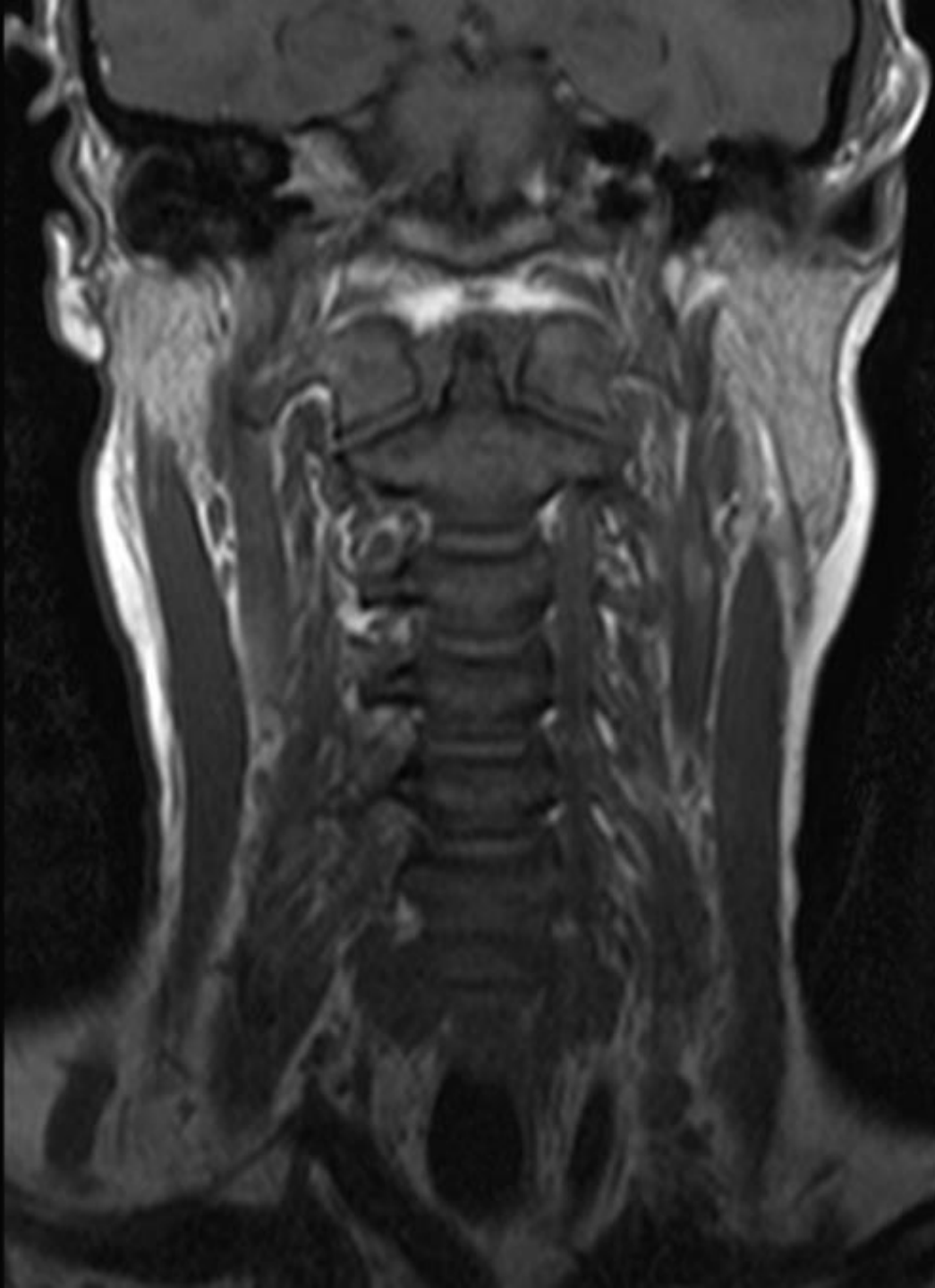
Typ	T2
Sekvence	STIR, TSE
Rovina	SAG
Vrstva mm	3
FoV mm	250
Matrix	176 x 187
Fáze	FH
TR ms	2500
TE ms	70
TSE factor	17
Čas	5:45
Různé	NSA 6 TI 165 ms Slices 12



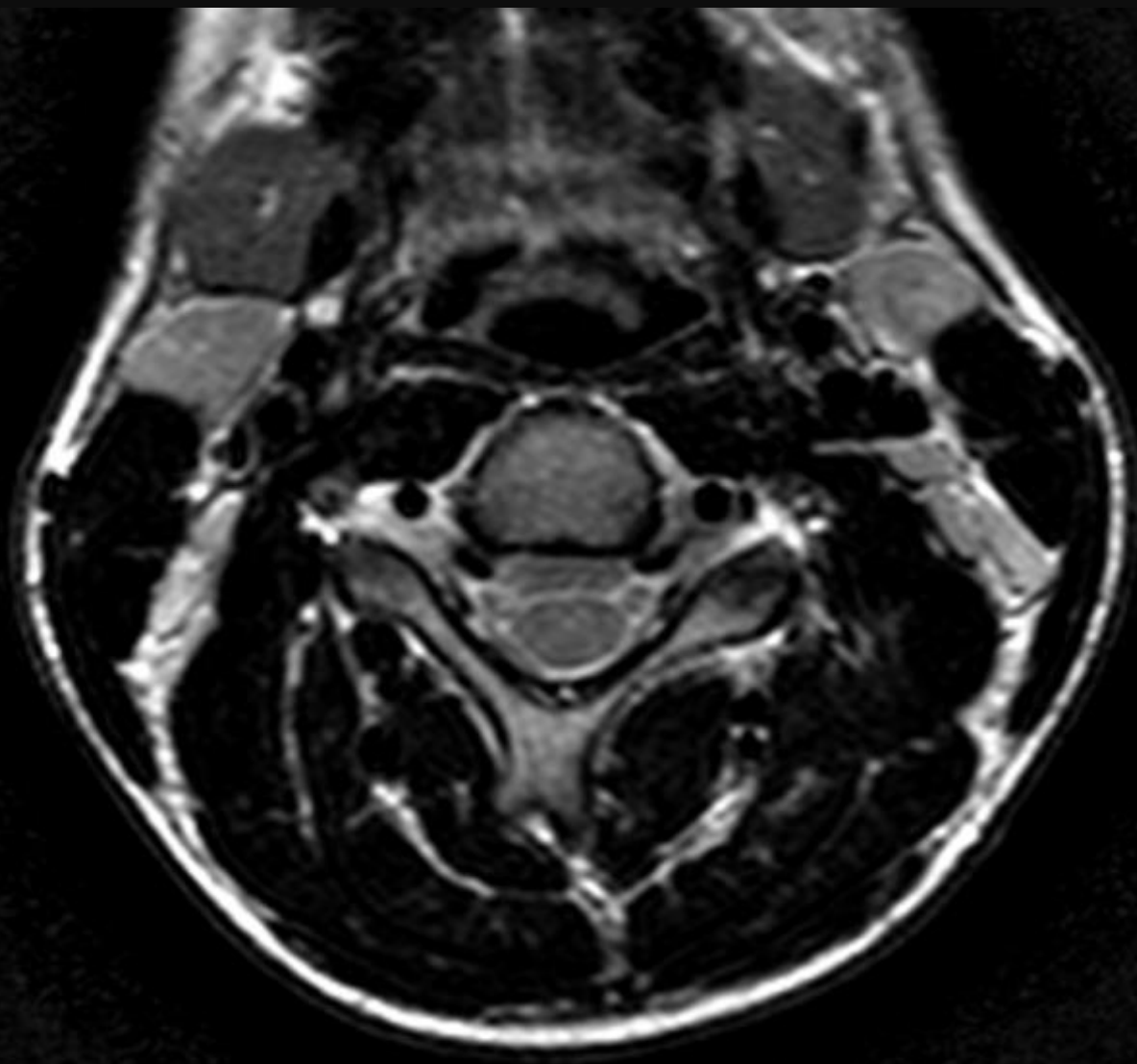
Typ	T2 SPAIR
Sekvence	TSE
Rovina	SAG
Vrstva mm	3
FoV mm	250
Matrix	176 x 198
Fáze	FH
TR ms	3000
TE ms	90
TSE factor	33
Čas	3:54
Různé	NSA 6 Fat suppression Slices 12



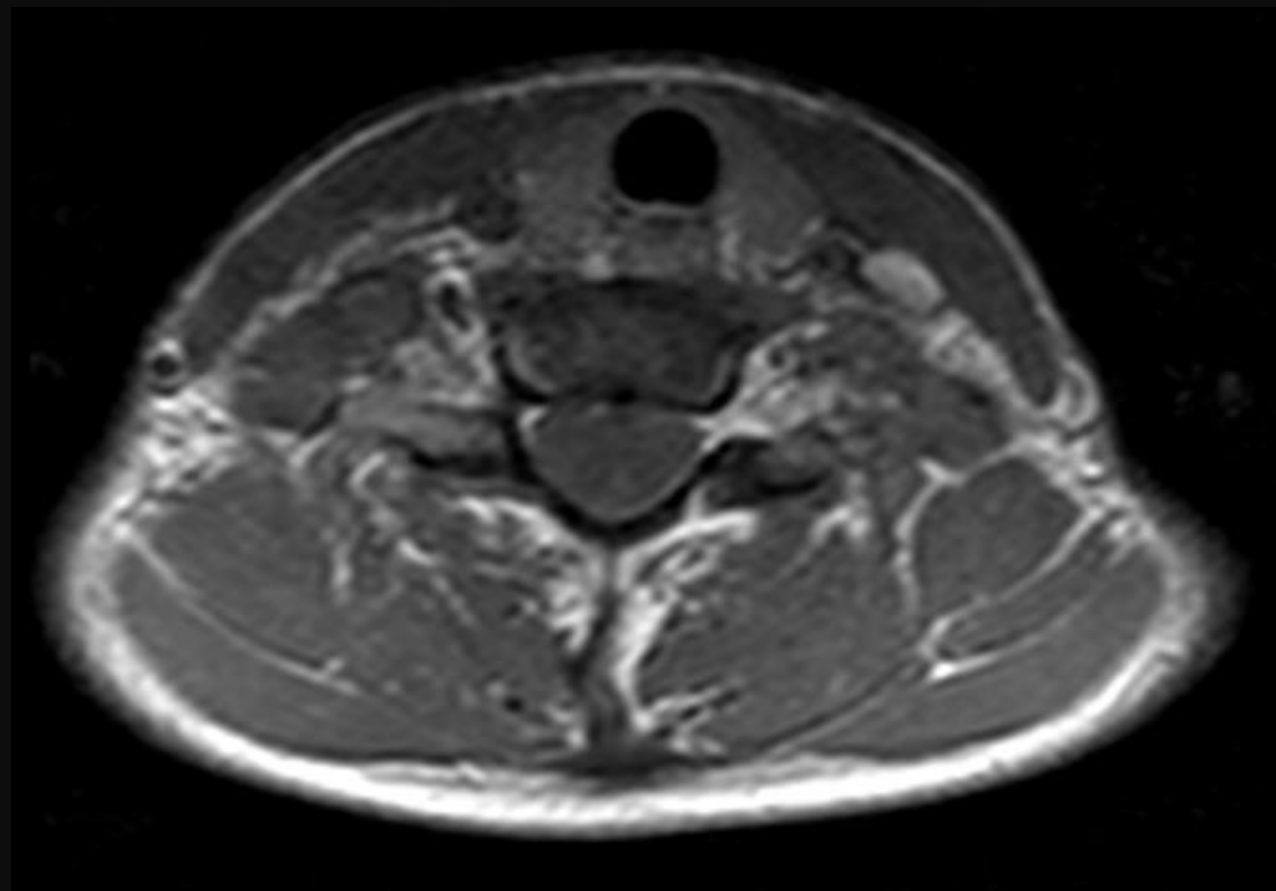
Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva mm	3
FoV mm	250
Matrix	176 x 200
Fáze	FH
TR ms	400
TE ms	7,8
TSE factor	5
Čas	2:14
Různé	NSA 4 Slices 12



Typ	T2
Sekvence	TSE
Rovina	TRA
Vrstva mm	3
FoV mm	140
Matrix	188 x 144
Fáze	RL
TR ms	3000
TE ms	120
TSE factor	24
Čas	3:54
Různé	NSA 6 Slices 24



Typ	T1
Sekvence	TSE
Rovina	TRA
Vrstva mm	3
FoV mm	170
Matrix	168 x 130
Fáze	RL
TR ms	400
TE ms	8
TSE factor	3
Čas	2:25
Různé	NSA 4 KL Slices 24



LS páteř

LS páteř

16-kanálová Spine coil

Kontrast	orientace	čas
T2	Sag	3:35
T1	Sag	4:03
T2 SPAIR	Sag	5:41
T2	Tra	2:48
T1	Cor	2:56
Option		
STIR	Sag	5:15
T1 GD	Tra	3:00

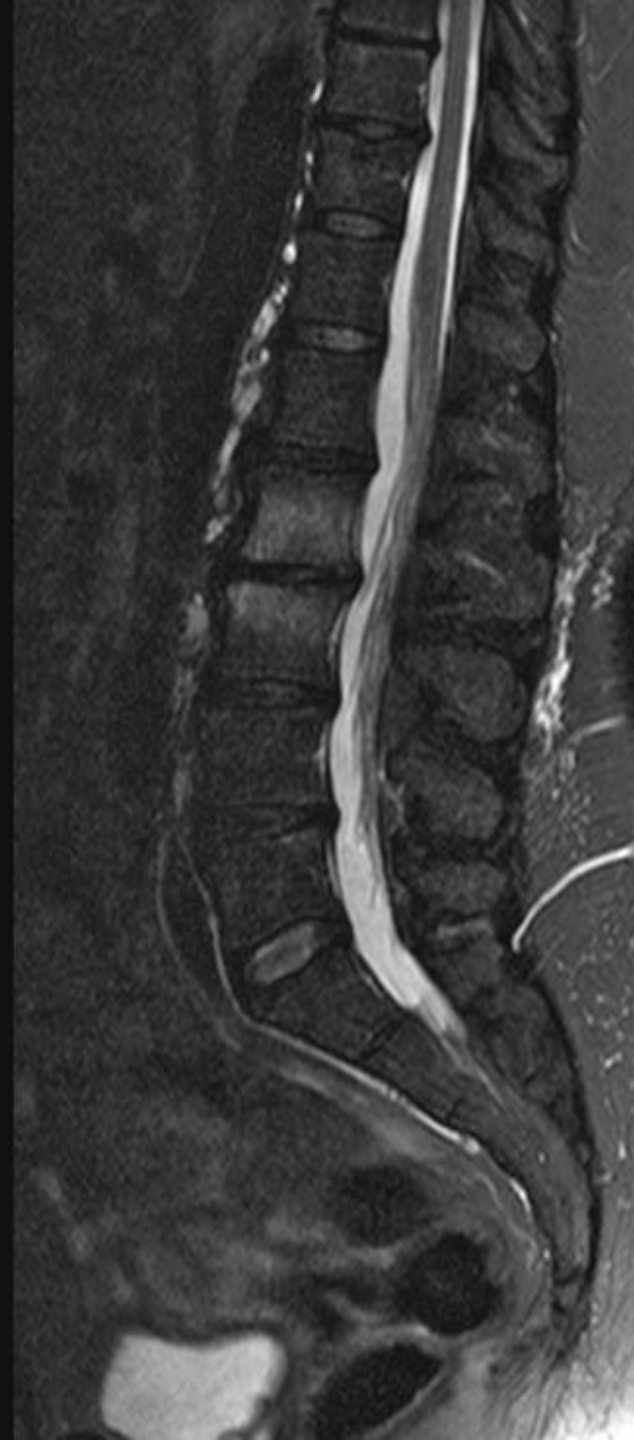
Typ	T2
Sekvence	TSE
Rovina	SAG
Vrstva mm	3,5
FoV mm	370
Matrix	176 x 289
Fáze	FH
TR ms	3122
TE ms	100
TSE factor	17
Čas	3:35
Různé	NSA 4 DRIVE Flow compensation Slices 15



Typ	T1
Sekvence	TSE
Rovina	SAG
Vrstva mm	3,5
FoV mm	370
Matrix	176 x 296
Fáze	FH
TR ms	400
TE ms	8
TSE factor	4
Čas	4:03
Různé	NSA 4 Slices 15



Typ	T2 SPAIR
Sekvence	TSE
Rovina	SAG
Vrstva mm	3,5
FoV mm	370
Matrix	176 x 294
Fáze	FH
TR ms	3222
TE ms	110
TSE factor	17
Čas	5:41
Různé	NSA 3 Fat suppression Flow compensation Slices 15



Typ	T2
Sekvence	STIR, TSE
Rovina	SAG
Vrstva mm	3,5
FoV mm	370
Matrix	160 x 264
Fáze	FH
TR ms	3500
TE ms	80
TSE factor	18
Čas	5:15
Různé	NSA 3 TI 150 ms Slices 15



Typ	T2
Sekvence	TSE
Rovina	TRA
Vrstva mm	3
FoV mm	170
Matrix	212 x 156
Fáze	RL
TR ms	3000
TE ms	120
TSE factor	24
Čas	2:48
Různé	NSA 4 Slices 20



Typ	T1 SPIR
Sekvence	TSE
Rovina	TRA
Vrstva mm	3
FoV mm	170
Matrix	188 x 148
Fáze	RL
TR ms	585
TE ms	8
TSE factor	4
Čas	3:00
Různé	NSA 4 Fat suppression KL Slices 20



Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva mm	3,5
FoV mm	370
Matrix	332 x 288
Fáze	FH
TR ms	400
TE ms	8
TSE factor	4
Čas	2:56
Různé	NSA 3 Slices 18

