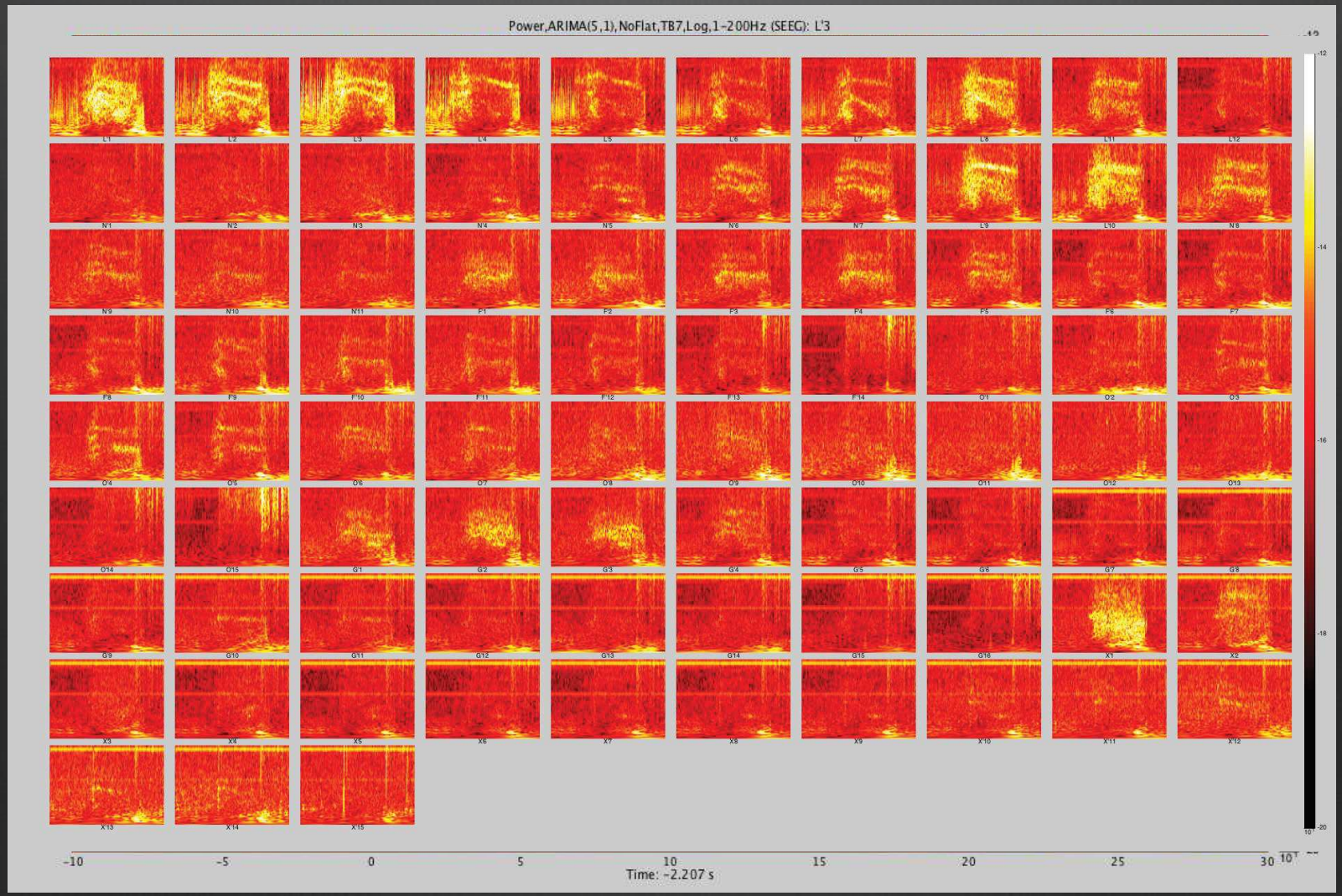
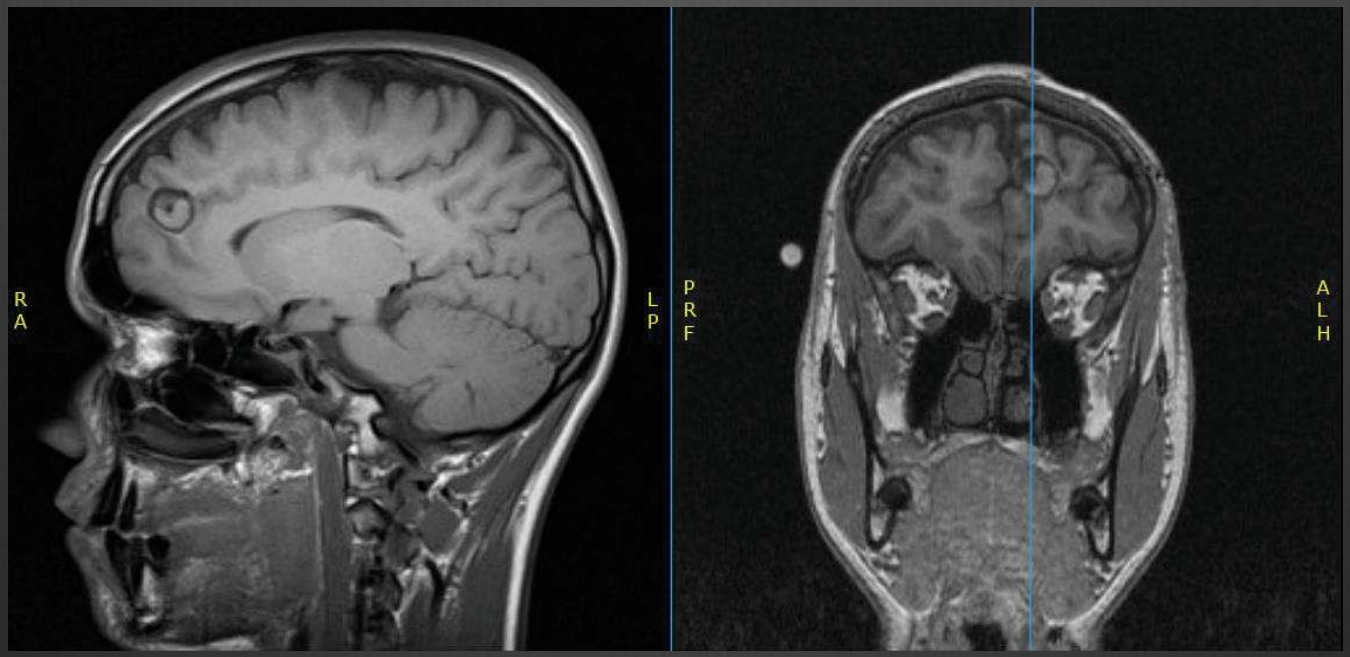

Power,ARIMA(5,1),NoFlat,TB7,Log,1-200Hz (SEEG): L'3
L1
L2
L3
L4
L5
L6
L7
L8
L11
L12
N'1
N'2
N'3
N'4
N'5
N'6
N'7
L'9
L'10
N'8
N'9
N'10
N'11
F'1
F'2
F'3
F'4
F'5
F'6
F'7
F'8
F'9
F'10
F'11
F'12
F'13
F'14
O'1
O'2
O'3
O'4
O'5
O'6
O'7
O'8
O'9
O'10
O'11
O'12
O'13
O'14
O'15
G'1
G'2
G'3
G'4
G'5
G'6
G'7
G'8
G'9
G'10
G'11
G'12
G'13
G'14
G'15
G'16
X'1
X'2
X'3
X'4
X'5
X'6
X'7
X'8
X'9
X'10
X'11
X'12
X'13
X'14
X'15
-12
-14
-16
-18
-20
-10
-5
0
5
10
15
20
25
30
Time: -2.207 s



Laser ablation JGM, follow-up 33 mths, seizure-free

Right posterior lesion, left temporal epilepsy

33 year-old right handed male

Epilepsy Onset: Age 17 (2002)

Seizure History:

- First seizure was a GTC. Has had only 4 in his lifetime.
- Well controlled until 2016.
- Since 2016: Seizures involving language and occurring up to 30 times a day.
- Currently on 3 AEDs and poorly controlled.

Additional History: Twin A (brother passed away after birth), premature at 8 months, perinatal hypoxia.

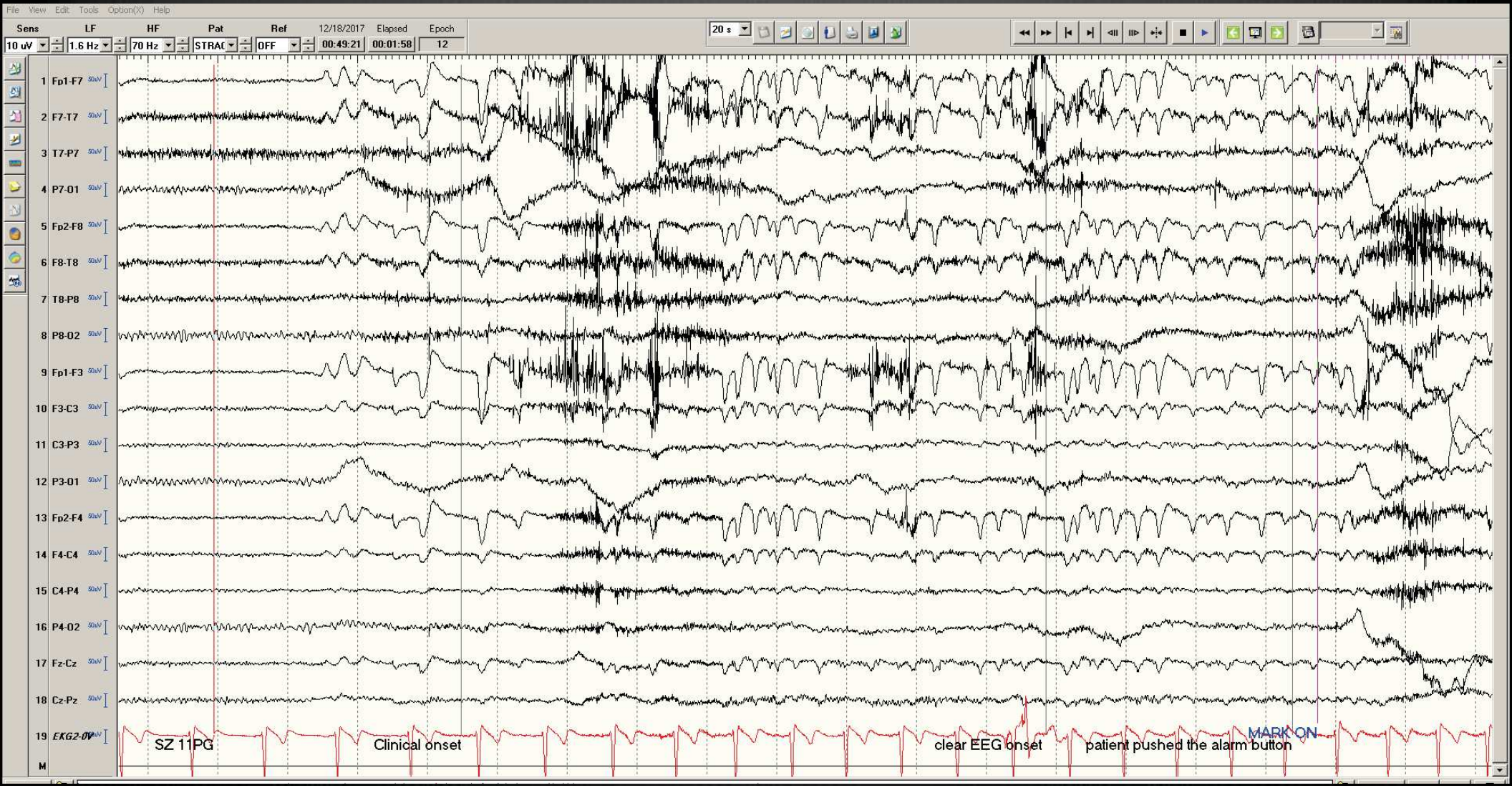
Seizure Semiology

Recorded:

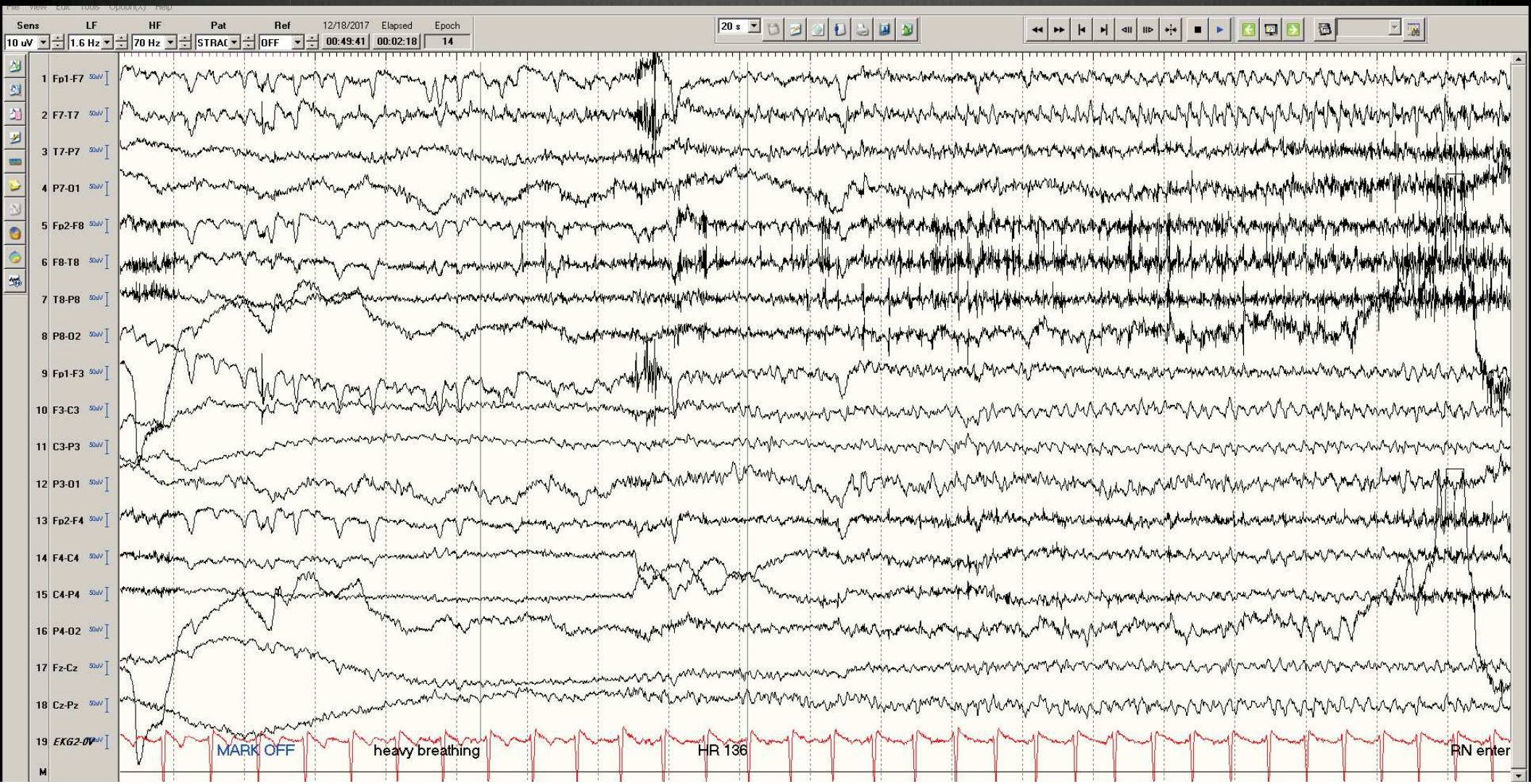
- Type A: GTC
  - Onset at age 17 (2002)
  - Buzzing/ringing/distorted sound in both ears, L>R
  - loss of consciousness, whole body shaking and lateral tongue bite
  - Post-ictal: Aphasia and confusion for 1-2 hours. Fatigue and sleepy for 6 hours.
  - Duration: 1 minute.
  - Frequency: 6 total (4 lifetime and 2 during admission 12/18/17)
  - Last: 12/18/17

- Type B
  - Onset: 10/2016
  - Aura: no
  - Ictal: difficulty reading, speaking, typing, writing
  - Post ictal: confusion, aphasia 10-15 seconds
  - Frequency: 30/day
  - Triggers: stress

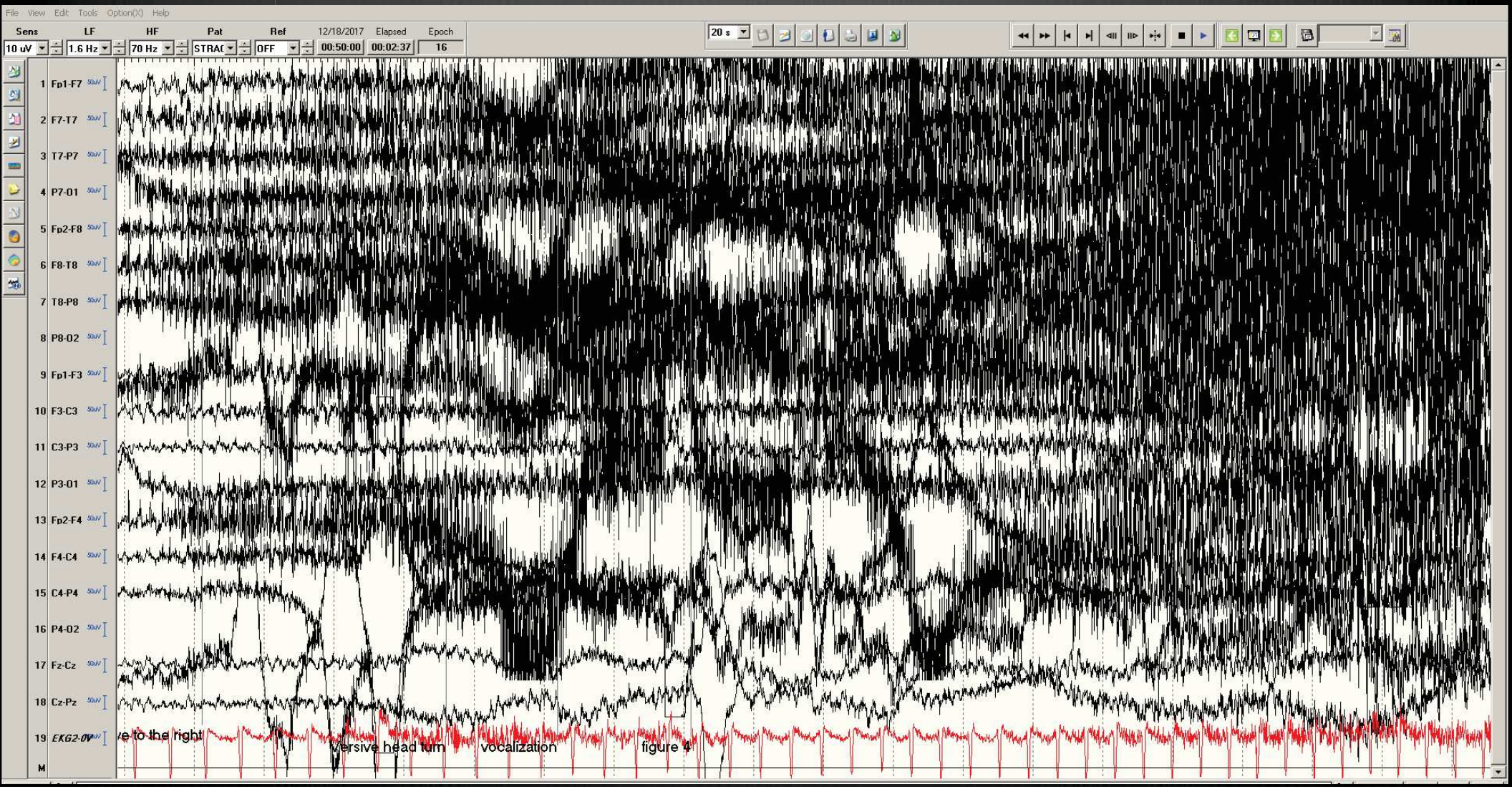
Video-EEG seizure



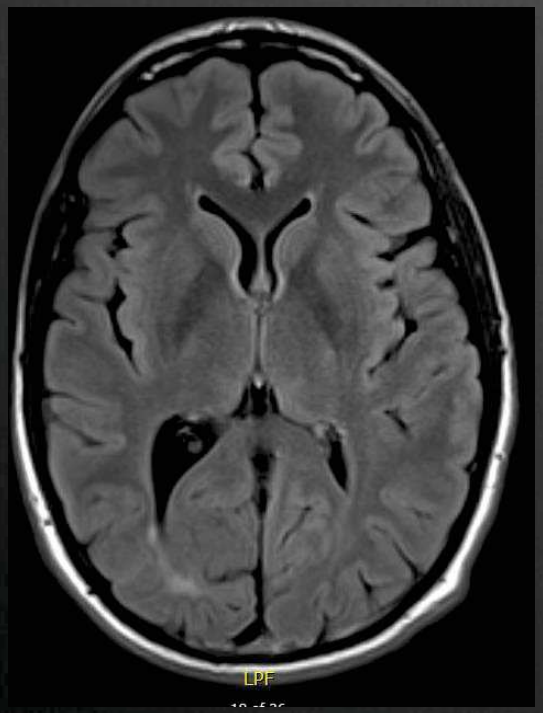
+20 seconds

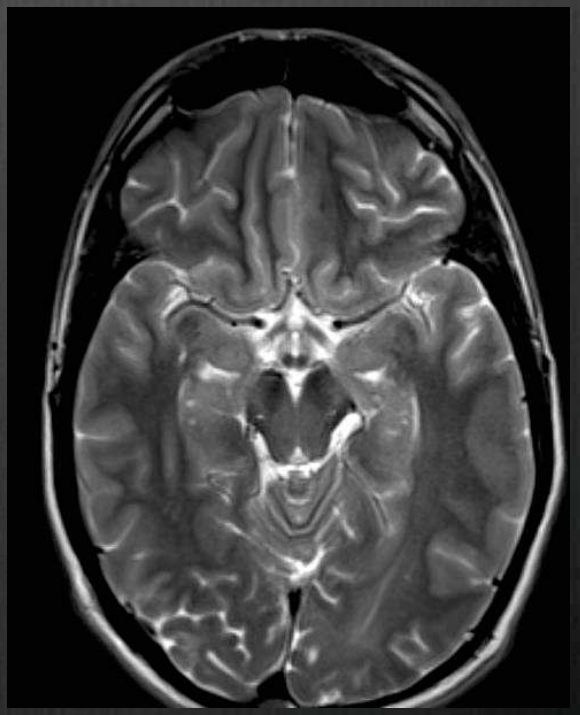

Sens
LF
HF
Pat
Ref
12/18/2017
Elapsed
Epoch
10 uV
1.6 Hz
70 Hz
OFF
00:49:41
00:02:18
14
20 s
1 Fp1-F7
2 F7-T7
3 T7-P7
4 P7-O1
5 Fp2-F8
6 F8-T8
7 T8-P8
8 P8-O2
9 Fp1-F3
10 F3-C3
11 C3-P3
12 P3-O1
13 Fp2-F4
14 F4-C4
15 C4-P4
16 P4-O2
17 Fz-Cz
18 Cz-Pz
19 EKG2-0V
M
MARK OFF
heavy breathing
HR 136
RN enter

+40 seconds

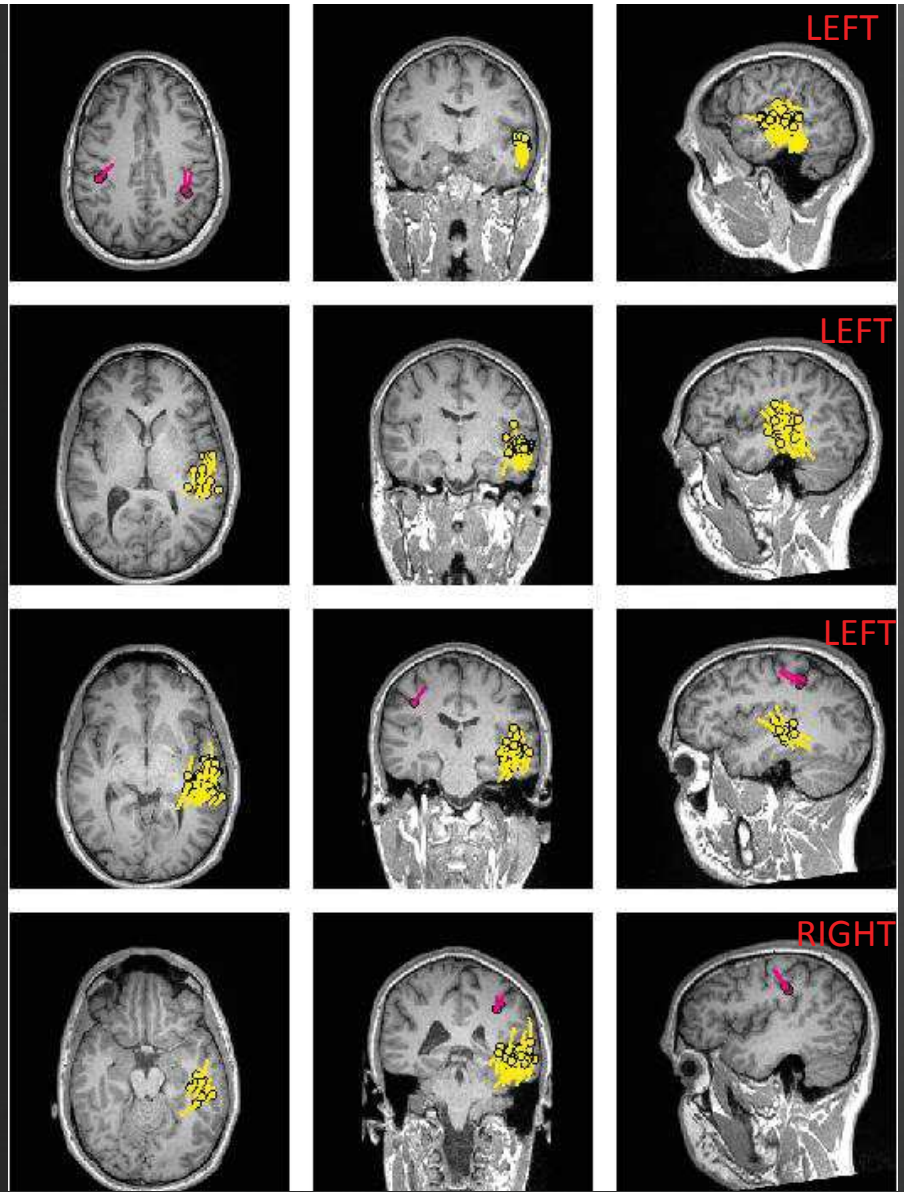

File View Edit Tools Option(X) Help
Sens LF HF Pat Ref 12/18/2017 Elapsed Epoch
10 uV 1.6 Hz 70 Hz STRAC OFF 00:50:00 00:02:37 16
20 s
1 Fp1-F7
2 F7-T7
3 T7-P7
4 P7-O1
5 Fp2-F8
6 F8-T8
7 T8-P8
8 P8-O2
9 Fp1-F3
10 F3-C3
11 C3-P3
12 P3-O1
13 Fp2-F4
14 F4-C4
15 C4-P4
16 P4-O2
17 Fz-Cz
18 Cz-Pz
19 EKG2-0V
M
e to the right
versive head turn
vocalization
figure 4

MRI without contrast





Right occipital encephalomalacia likely due to perinatal hypoxia



MEG (12/12/2017):

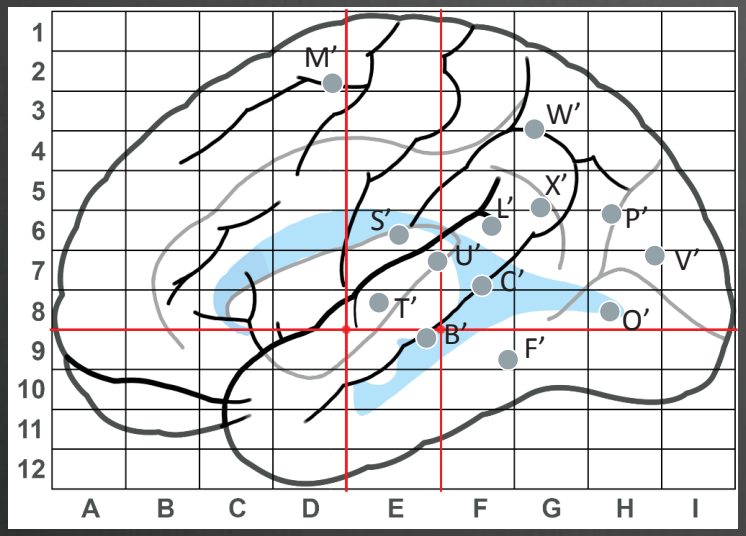
Interictal dipoles:

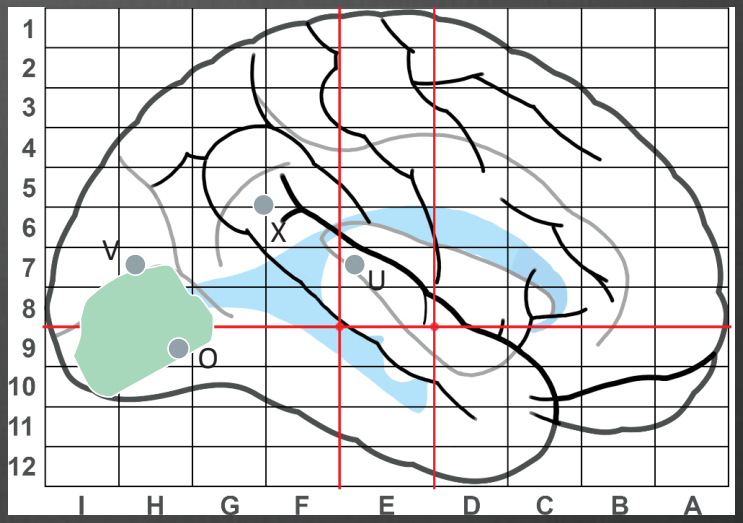
1. Tight dipole cluster over the LEFT posterior opercular region mainly infrasylvian (middle and posterior superior temporal sulcus and Heschl's gyrus). The polyspike activity demonstrates propagation from Heschl's gyrus to the superior temporal sulcus about 30% of the time. (90%)
2. Propagation of spike activity from posterior perisylvian to the inferior temporal sulcus (10%)

Of note: All Spikes were MEG-unique. 90% of polyspikes activity were MEG-unique. 10% of MEG polyspikes were seen associated with low amplitude polyspike activity on the scalp EEG.

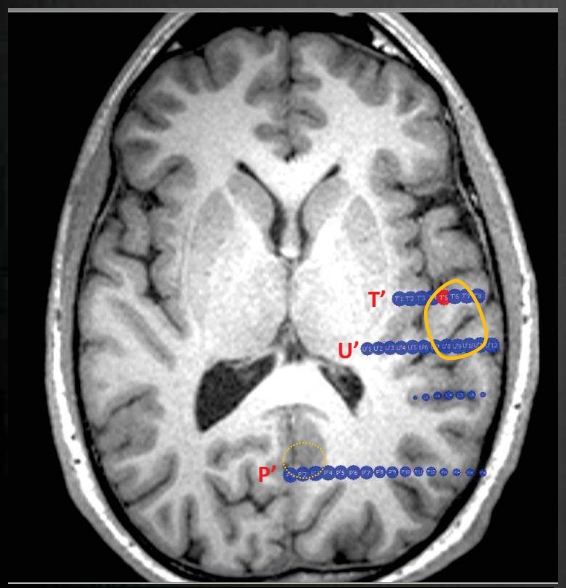
Location and orientation of interictal epileptiform discharges

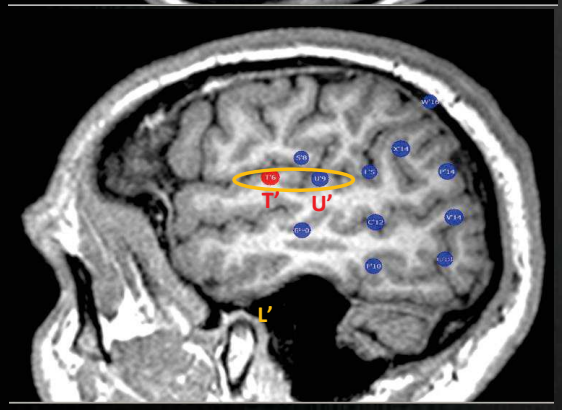
SEF to median nerve stimulation

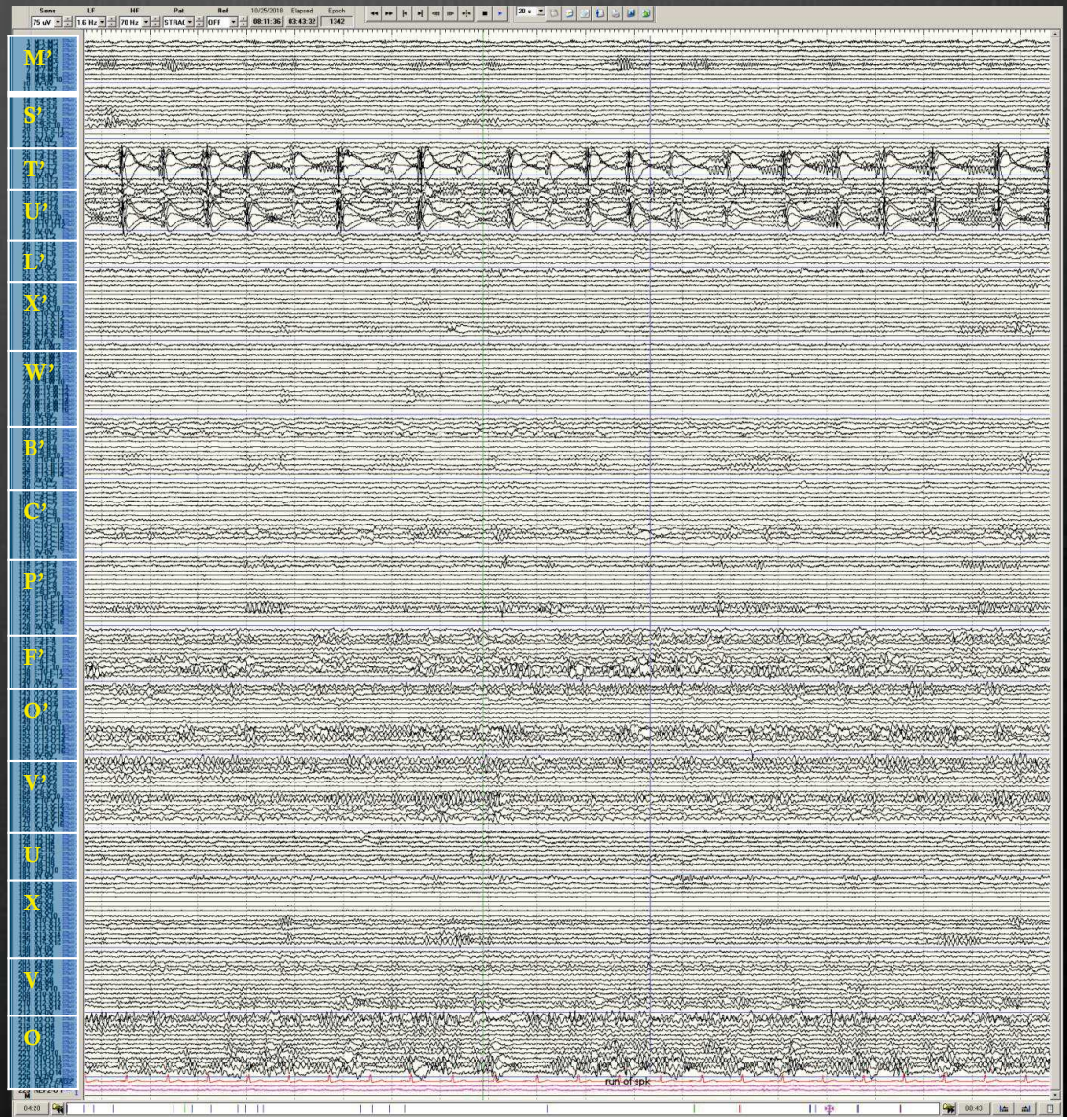




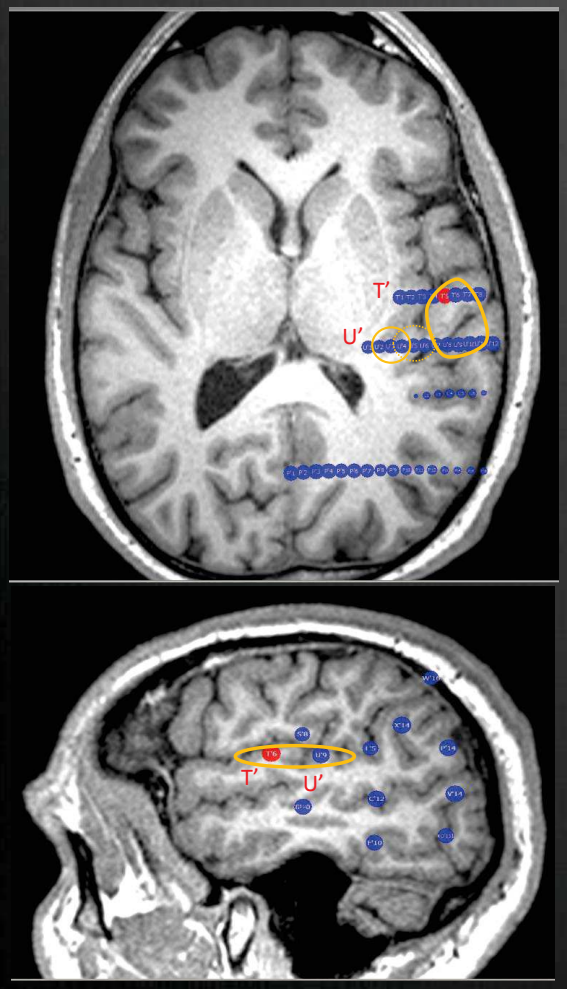
Hypotheses:
Left Planum Temporale
Left STS- STG posterior
Left Basal Temporal
Right Occipital (lesion)

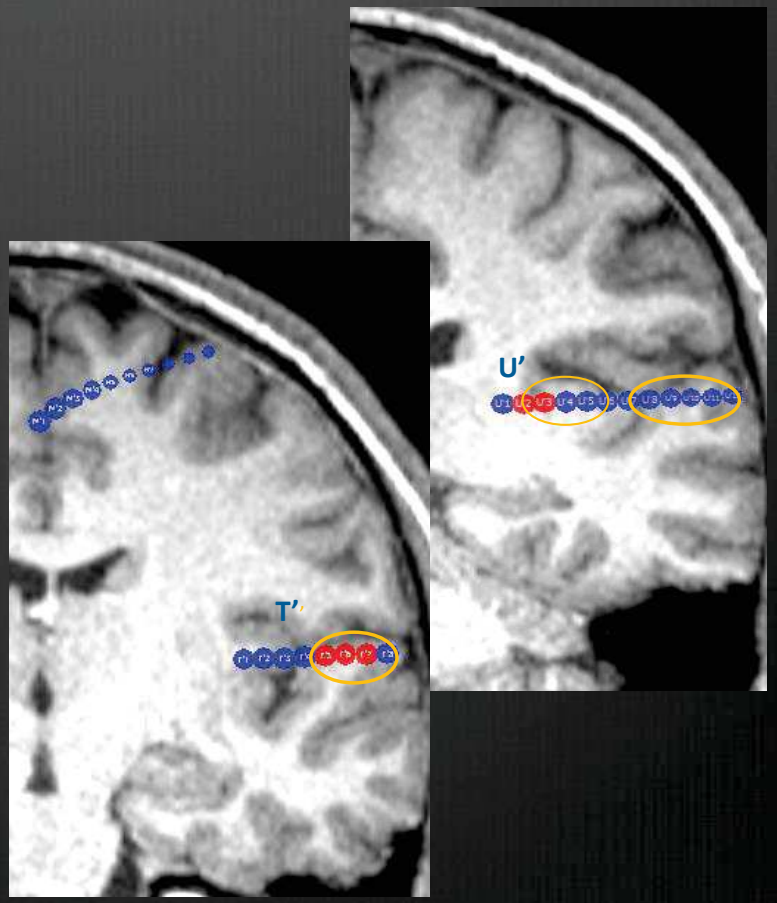

T’
U’
P’


T’
U’
L’


M’
S’
T’
U’
L’
X’
W’
B’
C’
P’
F’
O’
V’
U
X
V
O
run of spk

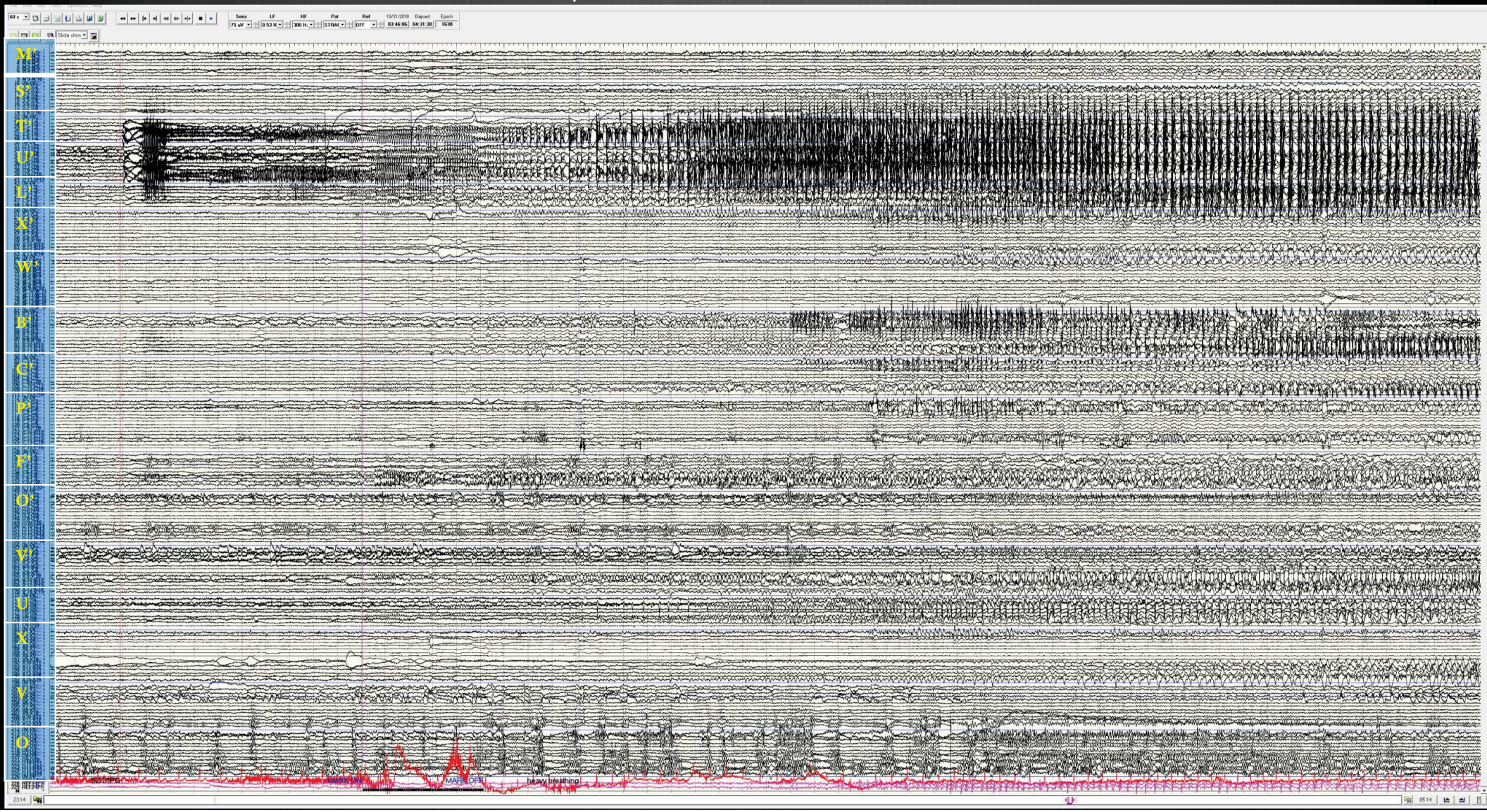
Interictal Abnormalities

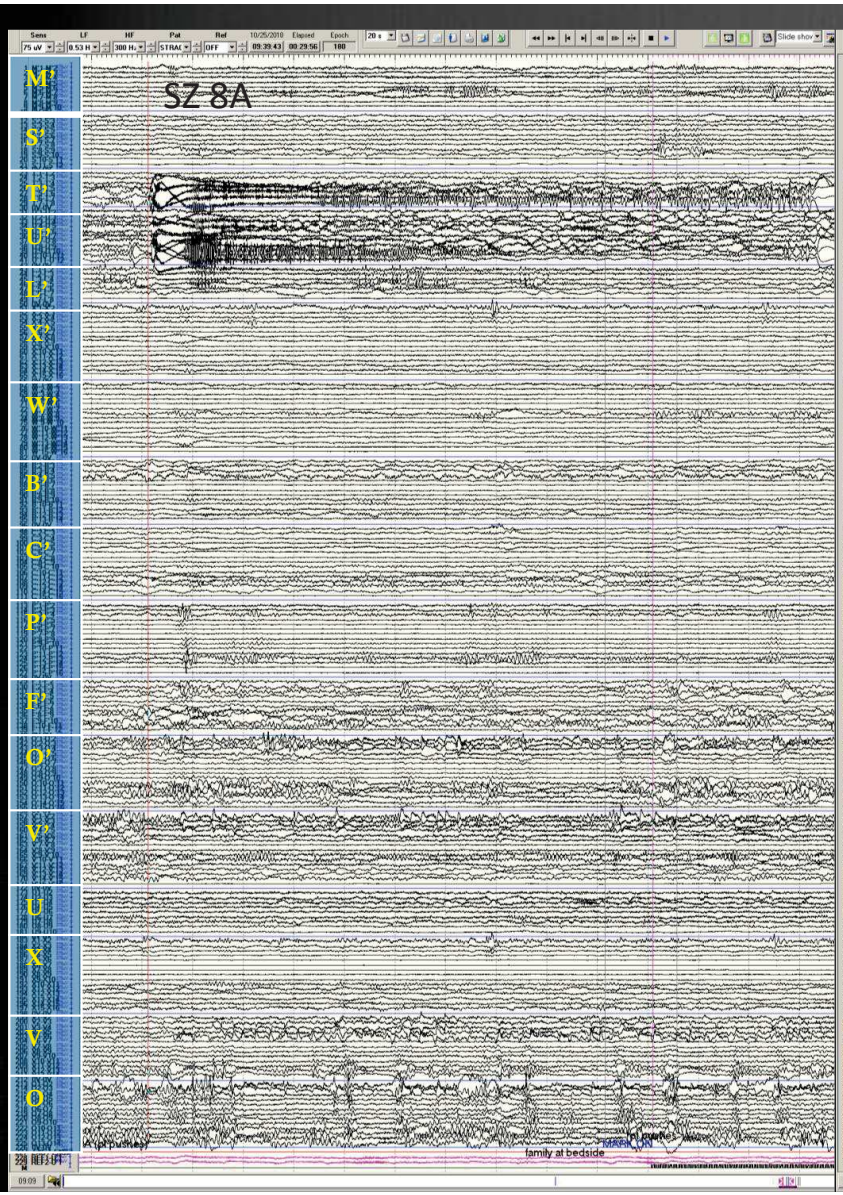


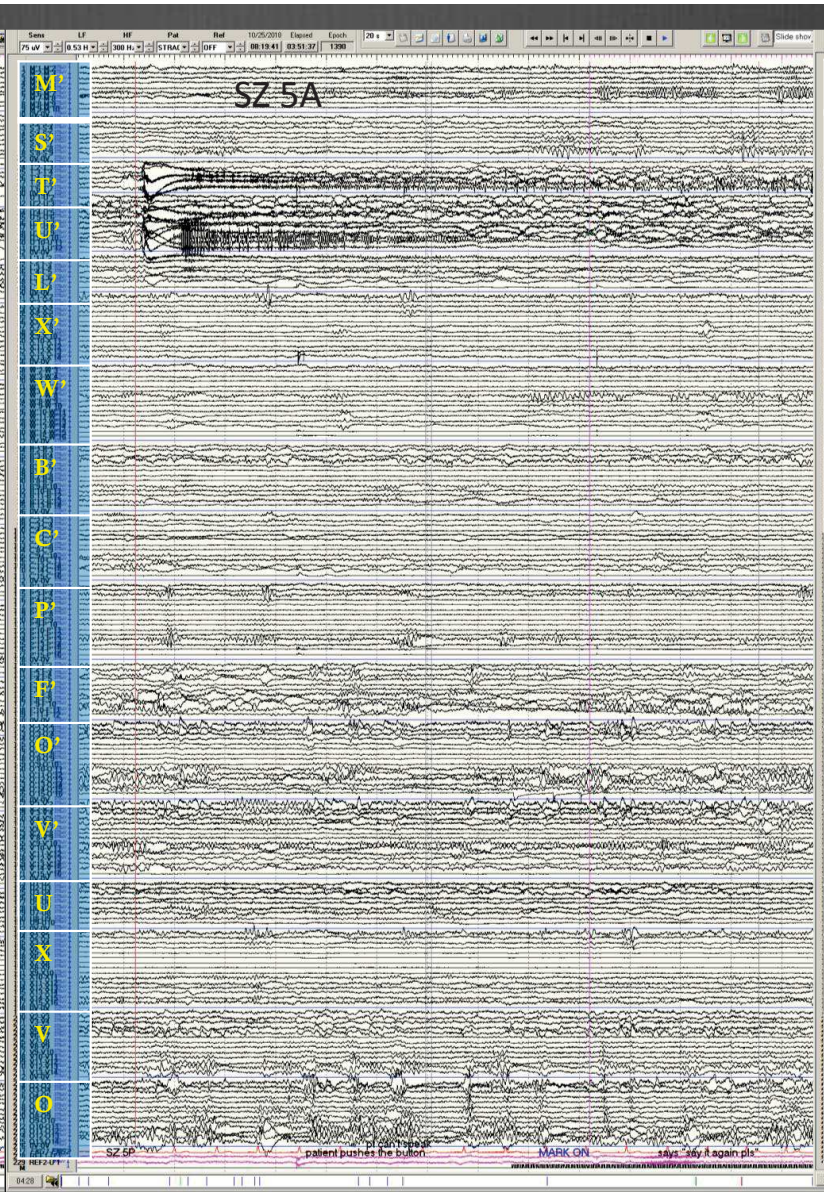


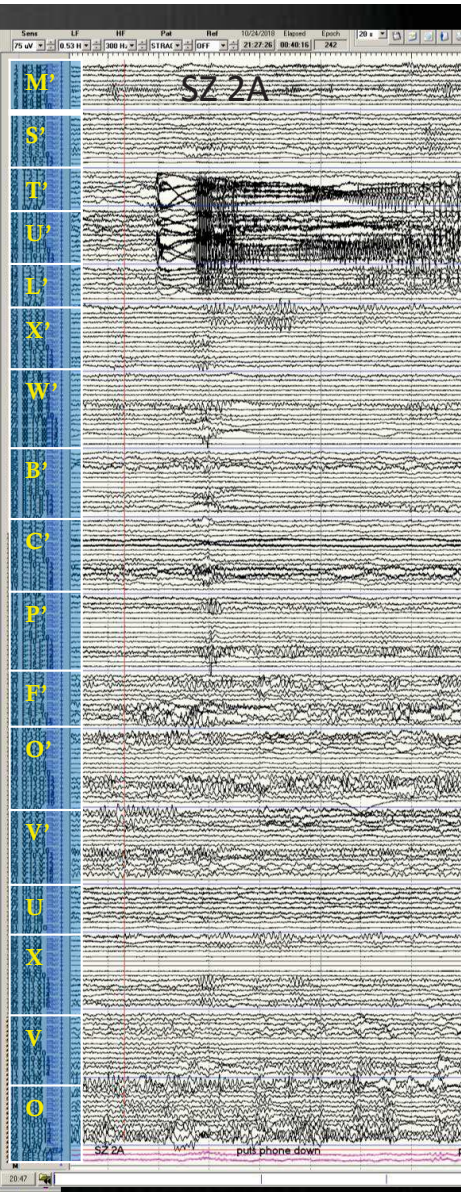
60sec

Spontaneous seizure

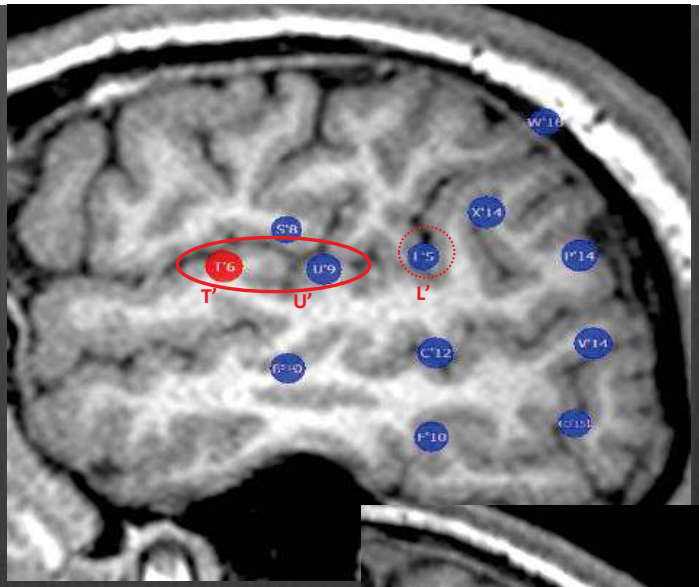


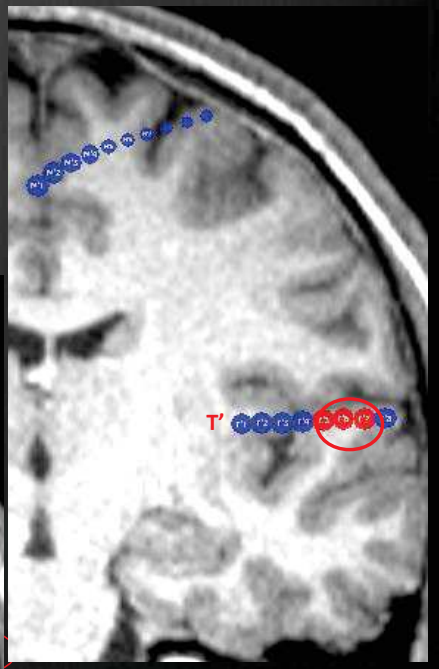

SZ 8A
M'
S'
T'
U'
L'
X'
W'
B'
C'
P'
F'
O'
V'
U
X
V
O
family at bedside
MARK ON

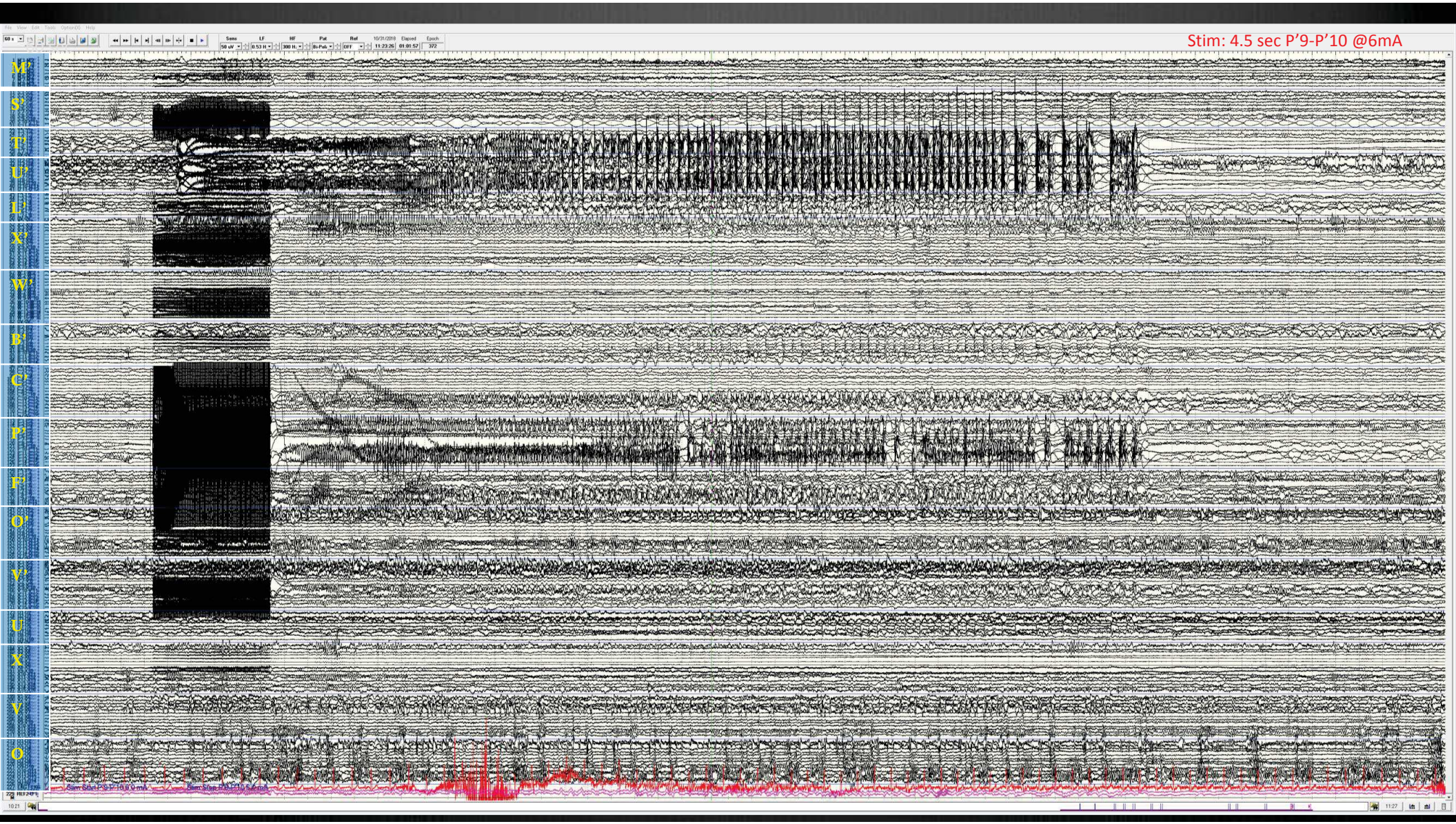

SZ 5A
M'
S'
T'
U'
L'
X'
W'
B'
C'
P'
F'
O'
V'
U
X
V
O
SZ 5P
patient pushes the button
MARK ON

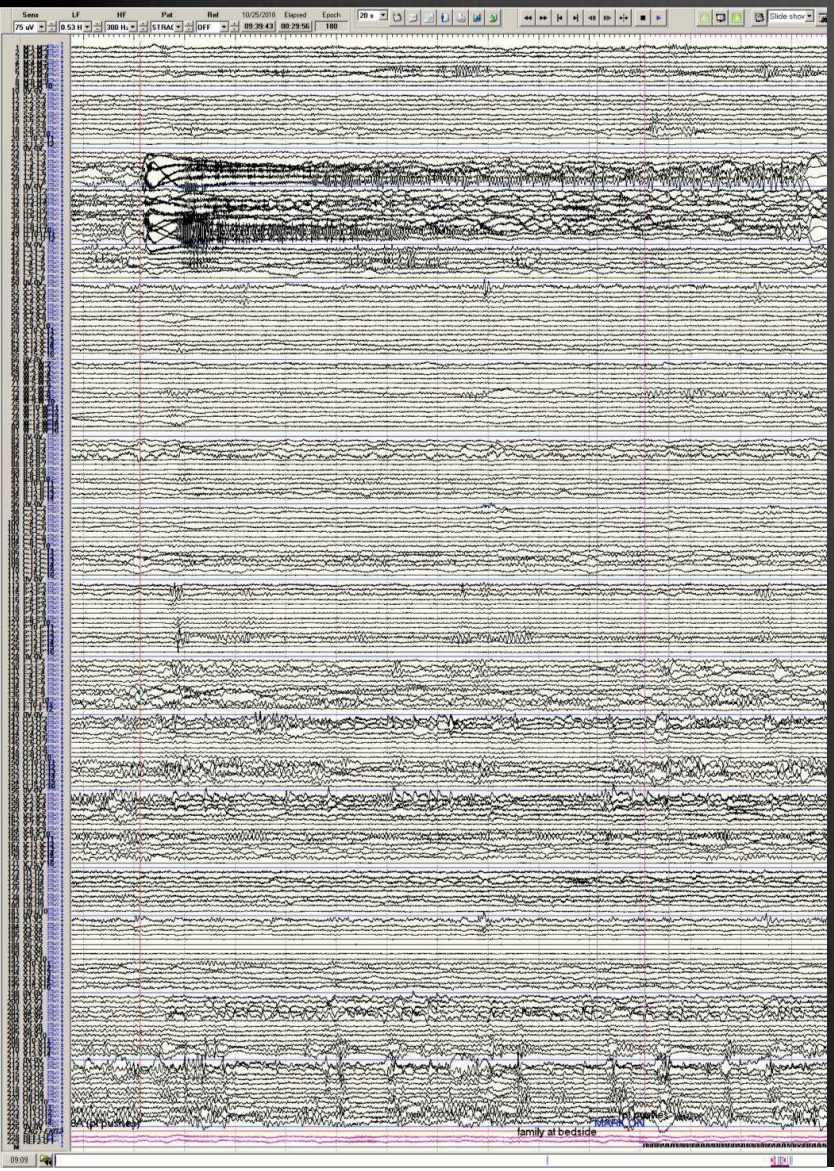

SZ 2A
M'
S'
T'
U'
L'
X'
W'
B'
C'
P'
F'
O'
V'
U
X
V
O
SZ 2A
puts phone down

Ictal Map

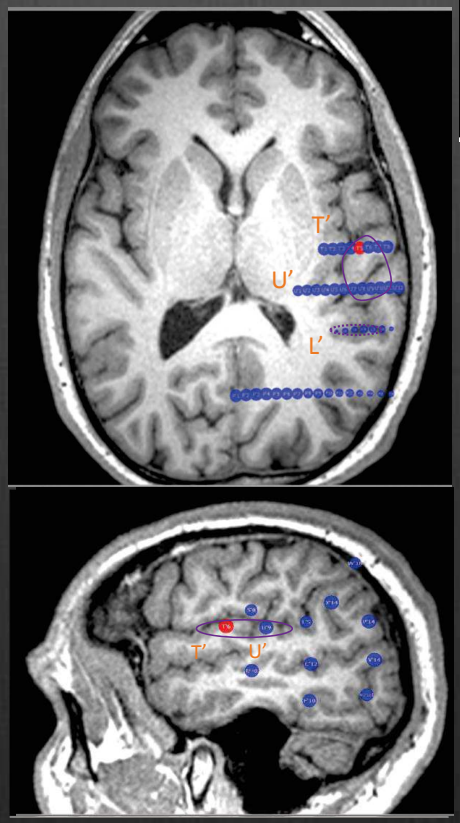


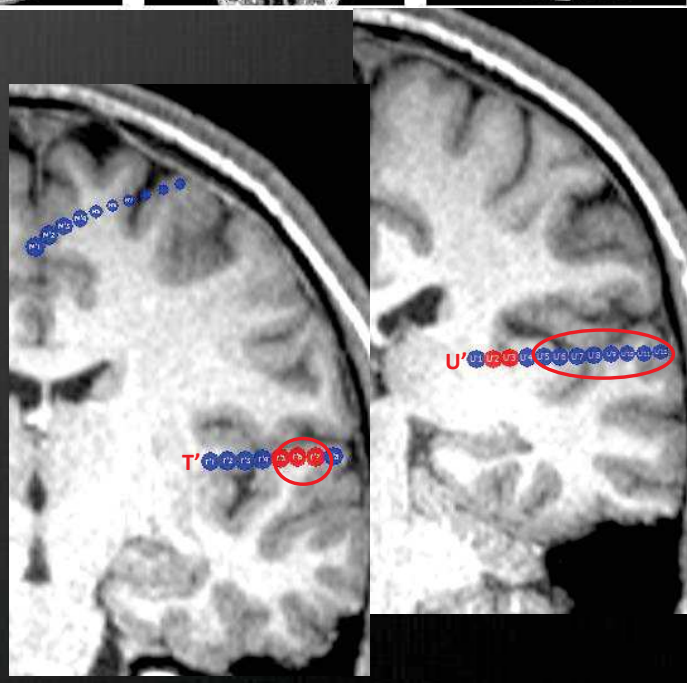



Stim: 4.5 sec P'9-P'10 @6mA
M'
S'
T'
U'
L'
X'
W'
B'
C'
P'
F'
O'
V'
U
X
Y
O



EZ and MEG





MEG: posterior opercular region, mainly infrasylvian (middle and posterior superior temporal sulcus and Heschl's gyrus)

Inferior parietal lobule lesion, mesial temporal epilepsy

Seizure History

53 year-old right-handed man

Epilepsy Onset: 9 -11y/o

Seizure History: Seizures began as nocturnal generalized tonic-clonic jerking in sleep and persistent ever since.

Additional RELEVANT History: He was boxer until age 20. He was hit in the head with bat around age 16. Got in fight, hit in head with belt in 6th grade. Paternal cousin with seizures.

Seizure Semiology

Recorded:

- 4/2017
  - Arousal from sleep → left eye deviation → subtle shifting in bed
- 7/2017
  - Arousal from sleep, shifting → left eye deviation→ (unresponsive) → right lower face/chest clonic → right head version

Anamnesis: Nocturnal convulsions

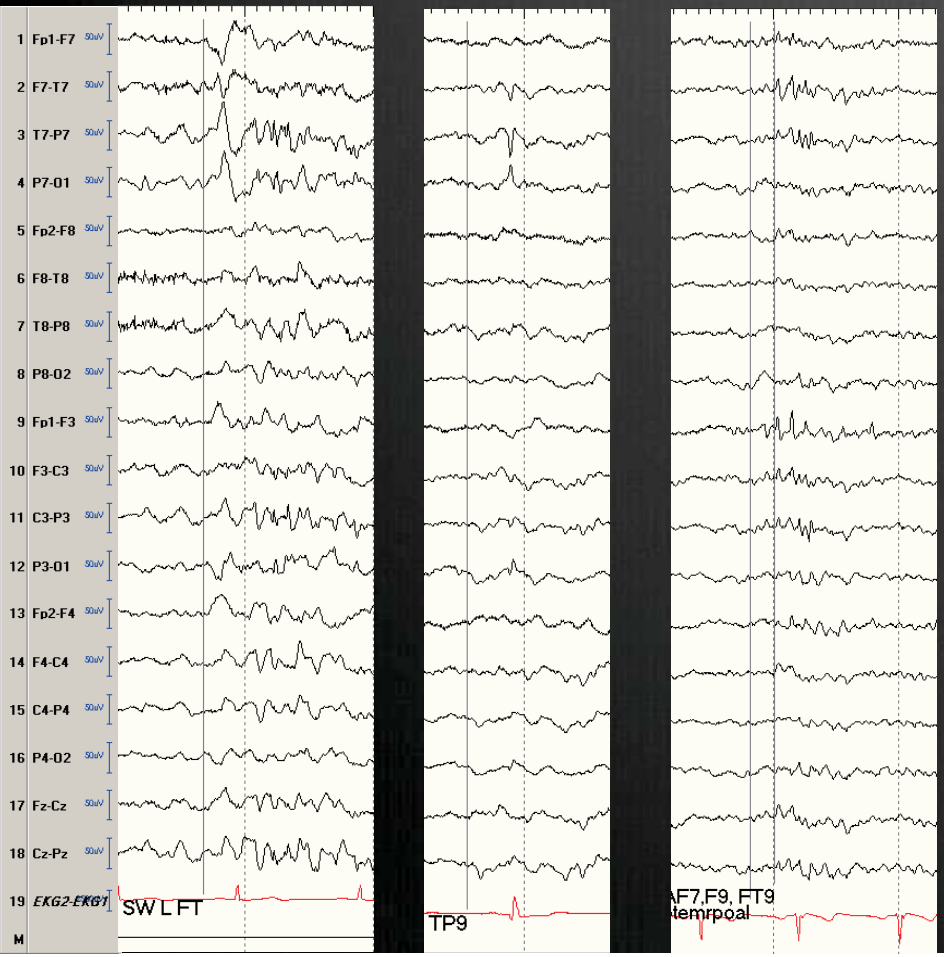
- Aura: NONE
- Ictal: Per girlfriend, eyes start blinking, then they would roll back in the head then he pauses, recently he started to stare off in space.
- Duration: 30 sec to 3 min. Frequency: 3 per month
- Injuries: bilateral shoulder dislocations with bilateral shoulder atrophy

SCALP EEG

SW L FT (FT9>F7.T7)

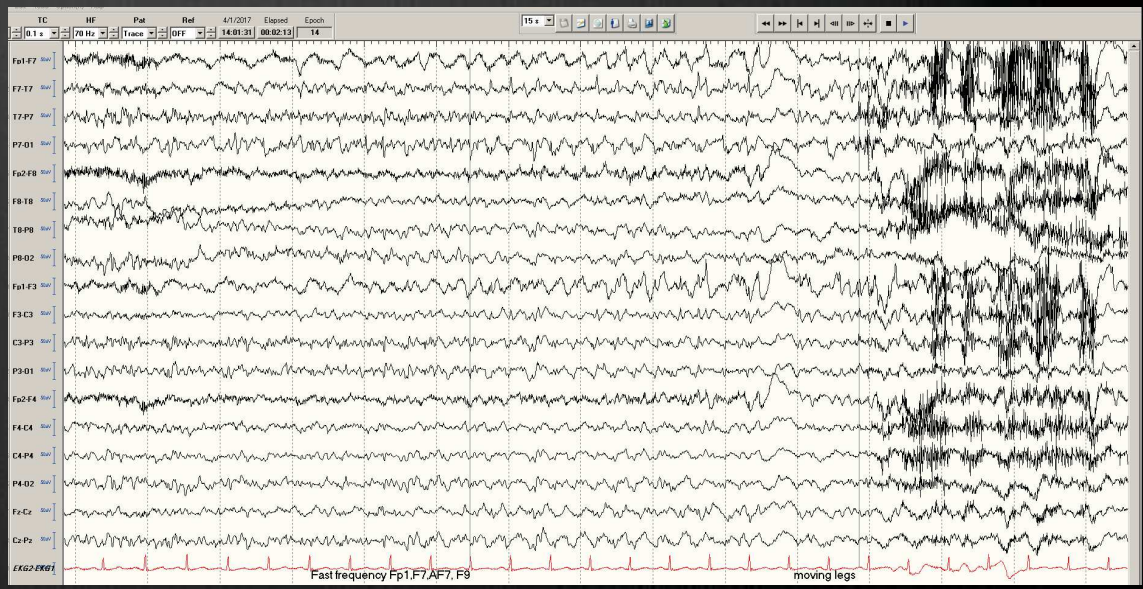
SW L pT (TP9>P7)

Sp L F/FT (Fp1, F7, F3, AF7, F9, FT9

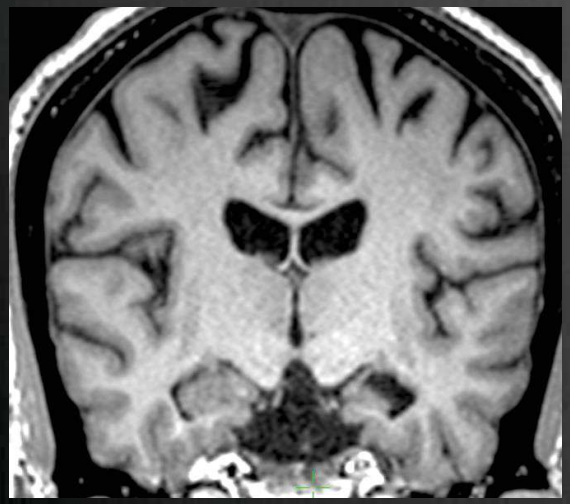


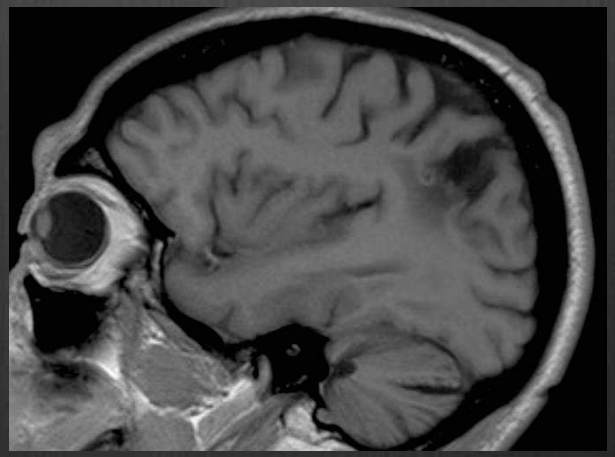
Seizure

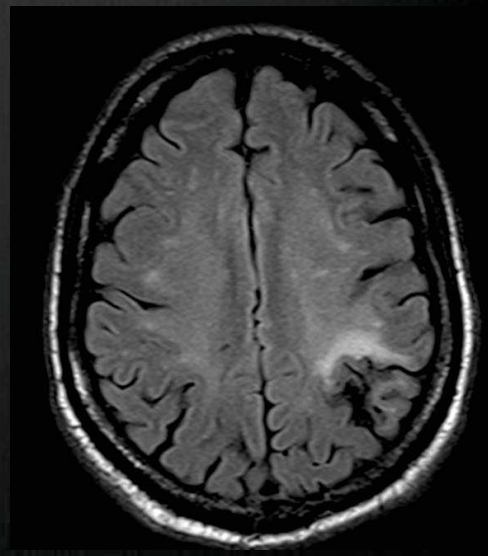
- Arousal from sleep
- Nonversive Left eye movement
- Subtle naturalistic leg movements



3T MRI without contrast (CCF, 7/24/2017)



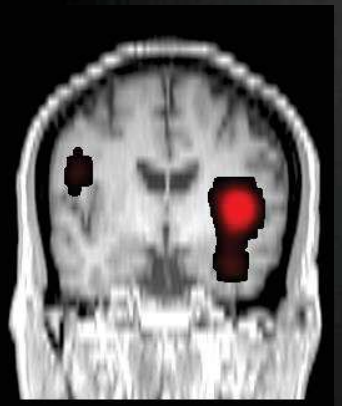




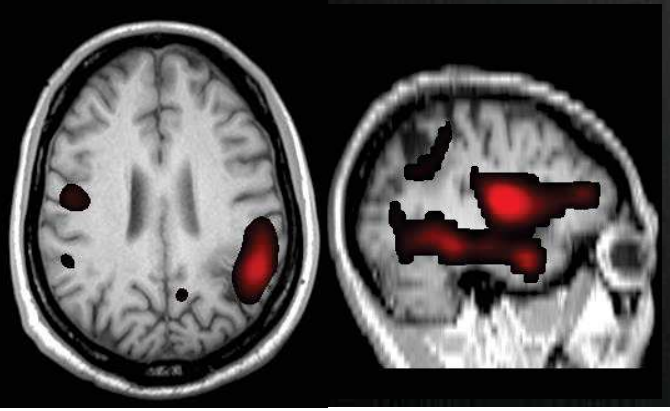
1. Left inferior parietal lobe lesion.
2. Underlying vascular malformation?
3. Left mesial temporal lobe atrophy.
4. Age expected mild senescent changes.

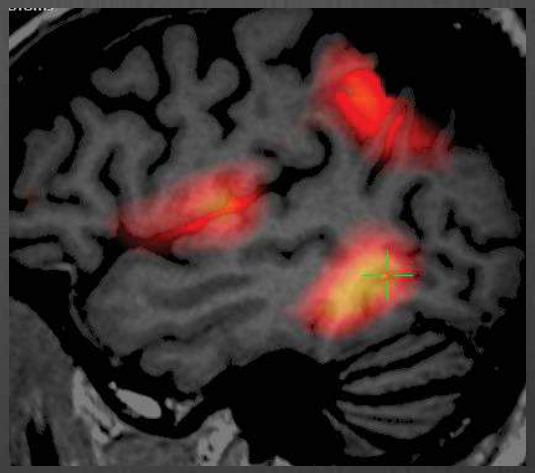
ictal SPECT

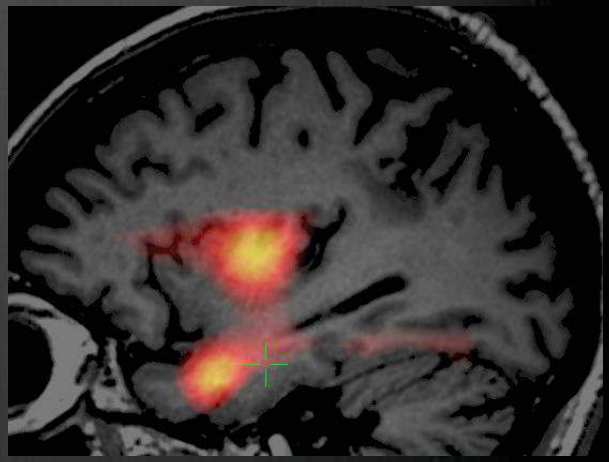
INJECTION TIME: 33s
FLUSH TIME: 39s
Z=1.5

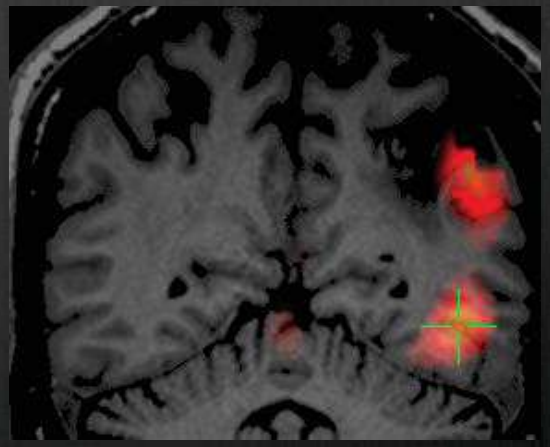


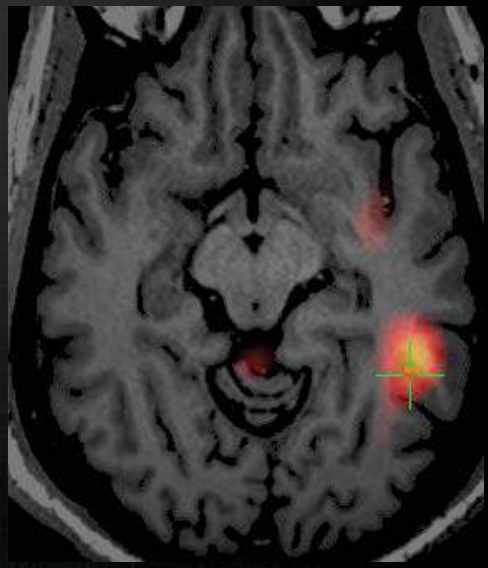
1. Left lateral parietal regions at the anterior and lateral margin of the perfusion defect.
2. Left insular region.
3. Left posterior to anterior deep lateral temporal region.
4. Right lateral parietal-occipital region.









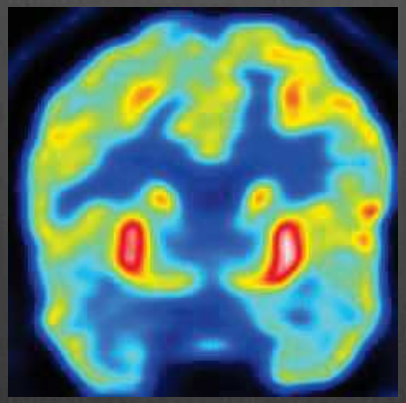


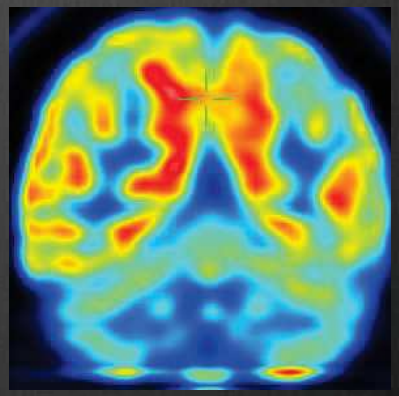
FDG-PET

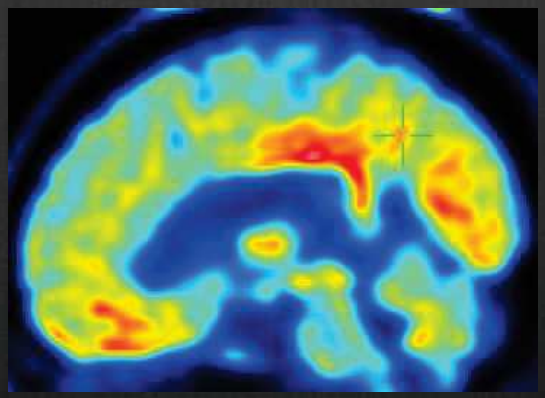
Diffuse cortical hypometabolism.

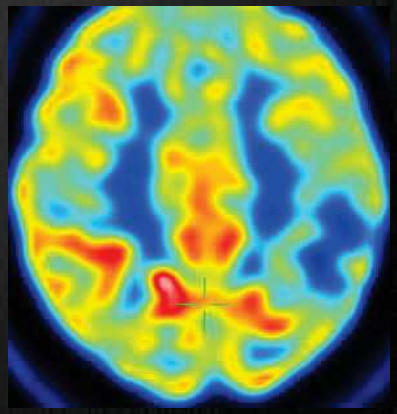
Bilateral temporal lobes hypometabolism more pronounced on the left temporal lobe.

Asymmetric hypometabolism in the left frontal, left parietal and left frontoparietal regions.

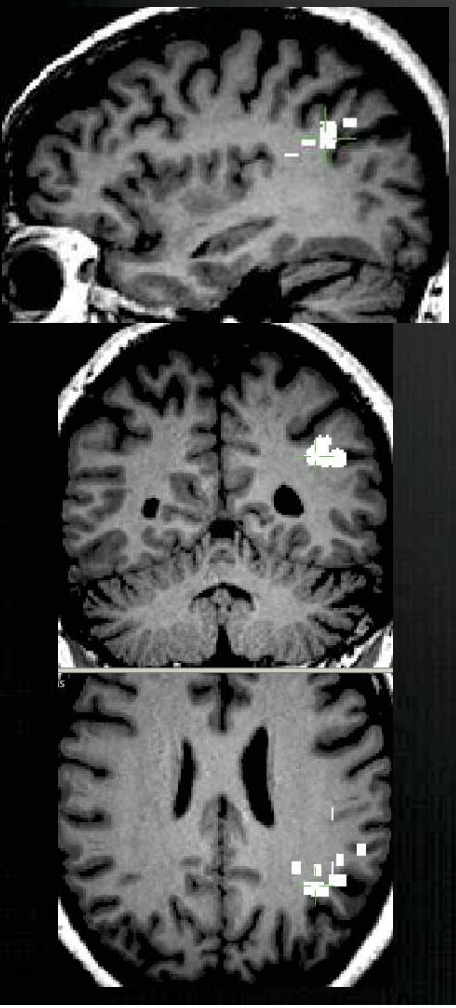






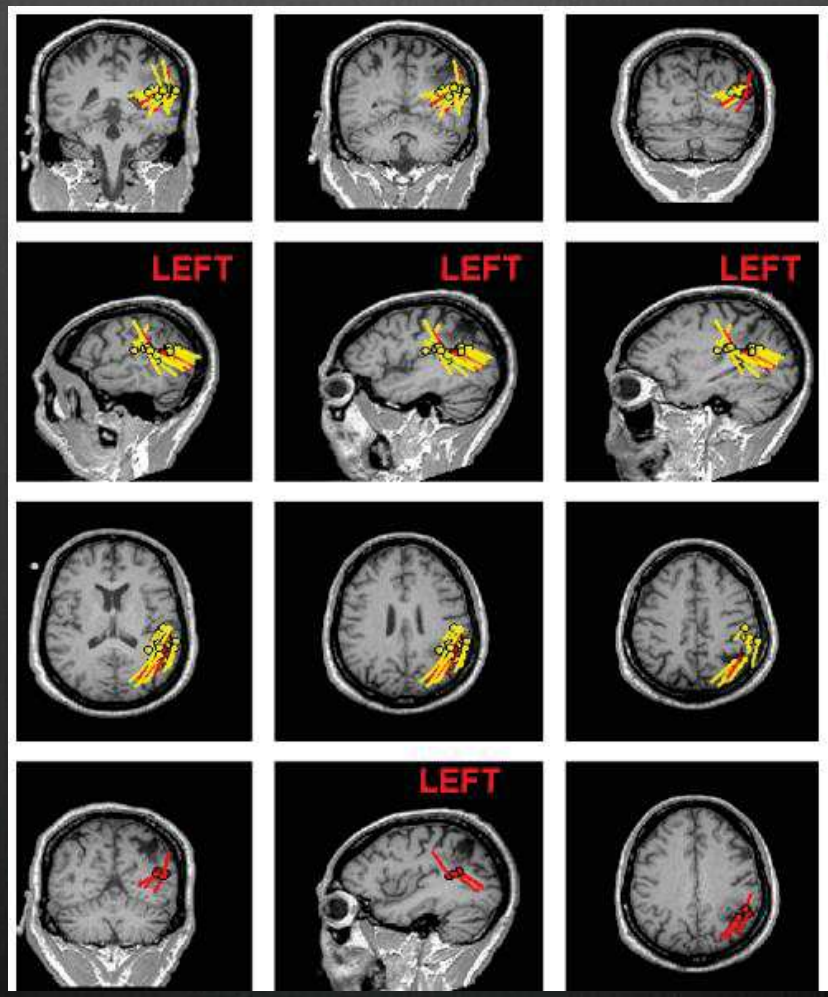


MEG



Interictal + Ictal

Ictal



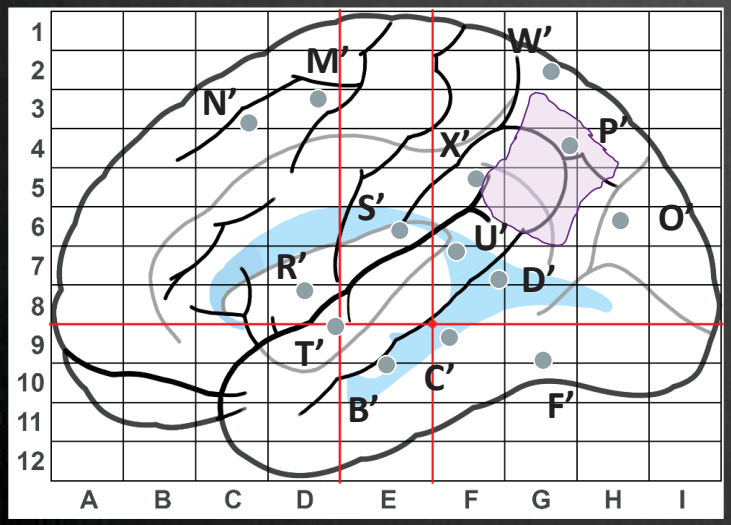
Interictal dipoles: 1. Left posterior parietal region (**Dipole 100%**)

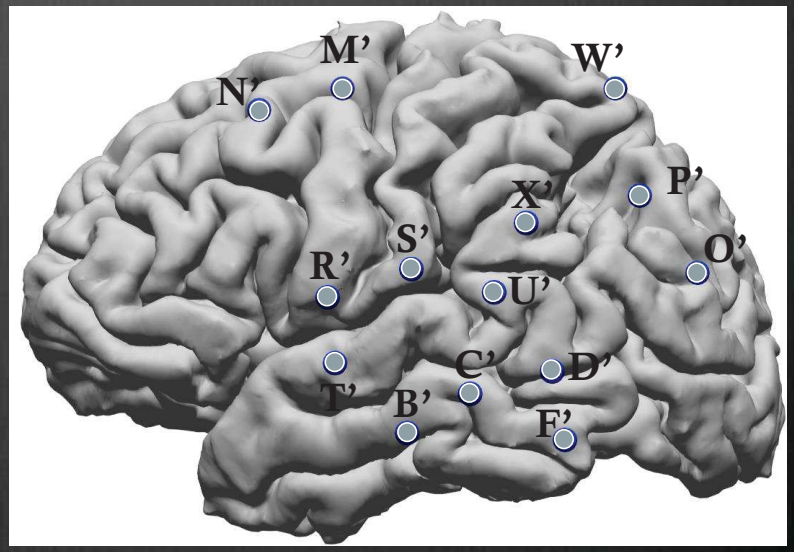
2. One **seizure** arising from left posterior parietal region --- at the inferior>lateral> anterior border of the previous surgery

Location and orientation of ictal discharges

Location and orientation of interictal epileptiform discharges

IMPLANTATION





Hypothesis:
Left Parietal (perilesional)
Left Angular – IPS
Left Hippocampus?

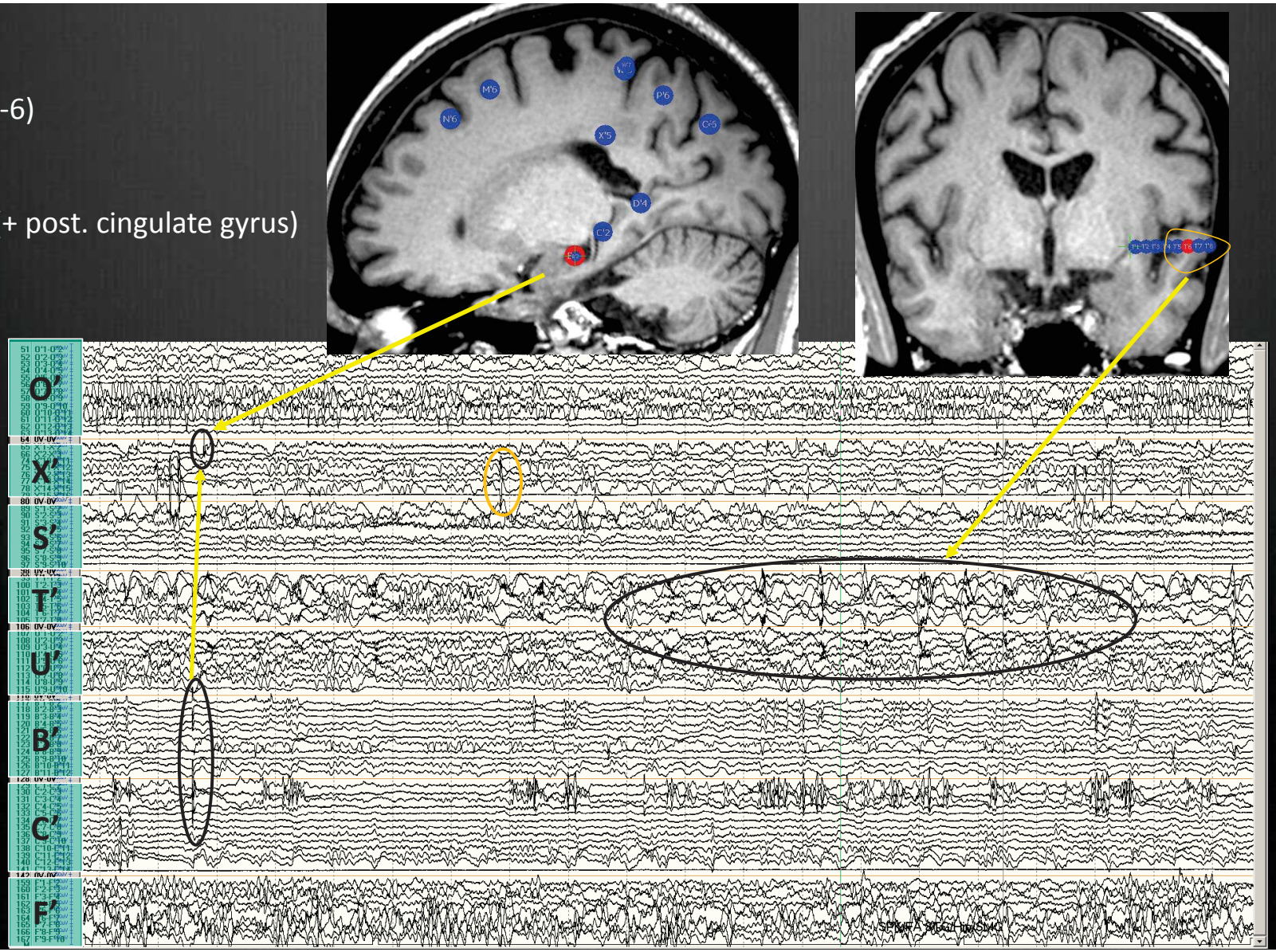
Encephalomalacia

INTERICTAL ACTIVITY

SPK/FA

STG (T’4-7, U’4-6)
SMG (X’13-15)

Hippocampus (+ post. cingulate gyrus)



SPKs

Post SMG lesion (X'12-15)