

Resection of high frequency oscillations predicts seizure outcome in the individual patient

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SUPPLEMENTARY MATERIAL

Table 1S: HFO rates of all patients. For each patient, we list the postsurgical seizure outcome (ILAE) and the names of the implanted channels. Channels excluded from the analysis are marked in gray. The resected area (RA) is highlighted in red. The rates of ripple, FR and FRandR events are given in events/minute for each channel. Channels with the HFO rate exceeding the 95% percentile of the HFO distribution define the HFO area and are highlighted in green.

Patient 1		LAE 1														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR4-5	1AR5-6	1AR6-7	1PR2-3	1PR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4
Ripples	33.1	56.2	40.2	26.7	31.1	0.6	1.7	11.8	19.4	21.4	19.7	3.2	0.6	0.2	47.8	46.2
FR	2.9	3.2	2.9	2.8	2.8	2.4	2.6	2.4	2.1	2.2	2.5	2.7	2.7	2.8	5.3	5.1
FRandR	0.3	0.6	0.5	0.2	0.4	0.0	0.0	0.0	0.9	2.4	0.4	0.0	0.0	0.0	2.7	2.7

Patient 2		LAE 1														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	44.1	17.7	5.1	12.2	14.4	2.6	1.5	2.7	51.4	11.7	0.6	4.8	1.8	1.8	71.4	19.7
FR	9.1	4.2	3.4	16.3	3.5	1.6	2.0	2.4	1.8	5.4	2.6	1.7	2.7	1.9	2.2	14.1
FRandR	4.6	1.4	0.9	7.5	1.0	0.0	0.0	0.0	0.1	2.7	0.2	0.0	0.8	0.0	0.0	6.7

Patient 3		LAE 1														
Channels	1AR12-3	1AR23-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4
Ripples	20.2	7.0	2.1	21.9	199.0	299.9	1.6	0.1	0.2	2.0	0.4	0.1	8.0	1.0	0.7	0.7
FR	16.5	7.3	2.5	10.1	5.8	5.1	2.4	2.3	2.5	2.7	2.7	2.8	3.5	3.0	6.8	6.8
FRandR	9.1	2.6	0.0	5.2	2.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	0.1	0.1

Patient 4		LAE 1														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	1.0	0.9	0.2	39.6	32.5	11.0	0.3	0.1	0.1	3.9	1.7	3.0	140.6	128.2	63.8	41.6
FR	2.3	2.3	2.8	29.6	18.0	5.5	2.8	2.8	2.4	2.9	2.9	2.5	5.7	5.3	4.2	19.0
FRandR	0.0	0.0	0.0	14.0	12.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.6	1.7	9.0

Patient 5		LAE 1														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	14.2	3.3	1.8	43.0	39.1	8.2	2.8	2.6	1.1	6.9	4.7	6.6	4.0	3.3	1.4	18.4
FR	3.8	2.8	2.4	12.6	2.6	4.1	2.4	2.1	2.2	2.5	2.7	2.7	2.8	3.5	3.0	6.8
FRandR	0.7	0.3	0.0	6.2	0.3	0.1	0.3	0.1	0.0	0.4	0.1	0.1	0.2	0.2	0.0	0.4

Patient 6		LAE 1														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	83.1	17.0	2.1	27.0	2.5	2.5	4.5	2.7	2.0	5.8	1.9	2.3	42.5	2.2	1.9	6.5
FR	9.2	5.5	2.6	8.6	6.2	2.7	2.3	2.6	2.3	3.6	3.0	2.2	2.3	2.2	2.6	2.4
FRandR	4.3	2.4	0.0	4.0	3.2	0.1	0.0	0.0	0.0	0.8	0.5	0.0	0.0	0.0	0.0	0.1

Patient 7		LAE 3														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	4.4	3.0	0.0	11.0	11.6	0.6	0.6	0.6	0.6	12.8	1.0	2.4	2.8	1.4	12.3	42.6
FR	5.2	3.4	0.6	5.6	3.4	3.6	17.4	21.8	27.0	36.2	18.0	6.0	3.4	3.8	5.2	5.0
FRandR	0.4	0.0	0.0	1.0	0.0	0.0	6.0	7.6	7.4	1.6	0.0	0.0	0.0	0.0	0.6	0.0

Patient 8		LAE 3														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	28.4	1.4	0.0	4.6	4.2	1.1	3.4	1.1	0.3	2.6	2.5	1.1	1.7	0.5	3.9	4.4
FR	11.5	3.1	1.9	2.9	2.2	2.4	5.9	2.2	2.4	4.8	3.5	2.2	2.3	2.4	2.1	4.7
FRandR	7.4	0.0	0.0	0.1	0.1	0.0	0.8	0.0	0.0	1.1	0.6	0.1	0.0	0.0	1.5	1.7

Patient 9		LAE 5														
Channels	1AR1-2	1AR2-3	1AR3-4	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3	1AR23-4	1AR34-5	1AR12-3
Ripples	35.7	12.8	3.6	22.9	7.3	1.6	59.0	27.2	1.9	22.0	9.9	6.8	64.7	14.4	2.9	23.3
FR	11.5	4.5	5.5	5.5	2.5	2.5	4.5	2.7	2.0	5.8	1.9	2.3	42.5	2.2	1.9	6.5
FRandR	7.0	0.8	1.0	2.6	0.1	0.0	1.5	0.2	0.0	1.1	0.1	0.0	27.5	0.2	0.0	0.8

Patient 10		LAE 1														
Channels	GR1-2	GR3-4	GR5-6	GR7-8	GR9-10	GR11-12	GR13-14	GR15-16	GR17-18	GR19-20	GR21-22	GR23-24	GR25-26	GR27-28	GR29-30	GR31-32
Ripples	9	14	11	4	2	29	57	42	44	60	38	25	35	61	5	13
FR	1	3	1	2	2	3	3	1	2	3	3	3	4	3	1	2
FRandR	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Patient 11		LAE 1														
Channels	GR1-2	GR3-4	GR5-6	GR7-8	GR9-10	GR11-12	GR13-14	GR15-16	GR17-18	GR19-20	GR21-22	GR23-24	GR25-26	GR27-28	GR29-30	GR31-32
Ripples	75.1	48.8	65.5	107.3	142.1	84.7	24.0	139.3	144.9	146.6	167.8	145.6	103.4	85.2	106.9	96.2
FR	4.6	2.6	2.6	2.8	3.4	3.6	3.2	6.7	6.3	3.9	4.2	3.6	3.4	3.3	5.9	4.6
FRandR	1.4	0.4	0.0	0.6	0.6	0.7	0.1	3.0	2.5	1.2	1.4	1.1	0.7	0.5	2.3	1.6

Patient 12		LAE 1														
Channels	GR29-29	GR29-30	GR30-31	GR31-32	GR32-33	GR33-34	GR34-35	GR35-36	GR36-37	GR37-38	GR38-39	GR39-40	GR40-41	GR41-42	GR42-43	GR43-44
Ripples	42.2	54.8	37.4	28.8	61.3	68.4	68.8	57.5	77.9	48.5	40.7	52.4	45.0	25.9	63.5	114.5
FR	4.5	3.6	2.4	2.4	11.3	36.4	34.7	6.6	6.6	2.7	2.4	6.6	9.0	2.6	4.8	5.1
FRandR	1.2	0.6	0.2	0.1	2.6	4.1	5.5	1.1	5.5	1.4	0.4	0.3	1.7	0.3	0.4	1.2

Patient 13		LAE 1														
Channels	GR55-56	GR57-58	GR59-60	GR61-62	GR63-64	GR65-66	GR67-68	GR69-70	GR71-72	GR73-74	GR75-76	GR77-78	GR79-80	GR81-82	GR83-84	GR85-86
Ripples	38.1	78.5	70.5	38.1	18.6	51.6	87.1	60.2	121.5	109.0	51.1	42.2	23.5	20.6	0.2	0.1
FR	2.7	3.3	2.6	2.2	2.0	3.1	3.1	2.4	77.6	60.7	17.6	4.2	3.3	2.7	2.6	2.3
FRandR	0.1	0.5	0.3	0.1	0.0	0.4	0.6	0.3	31.4	22.6	6.5	0.9	0.4	0.2	0.0	0.0

Channels 1PR14-15 1PR15-16 1PR16-17 1PR17-18 1PR18-19 1PR19-20 1PR20-21 1PR21-22 1PR22-23 1PR23-24 1PR24-25 1PR25-26 1PR26-27 1PR27-28

Patient 14		LAE 1														
Channels	GL1-2	GL3-4	GL5-6	GL7-8	GL9-10	GL11-12	GL13-14	GL15-16	GL17-18	GL19-20	GL21-22	GL23-24	GL25-26	GL27-28	GL29-30	GL31-32
Ripples	65.2	51.9	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
FR	6.7	2.9	2.8	2.7	2.4	2.7	3.5	3.2	3.3	2.8	2.2	2.9	3.0	2.3	3.1	2.7
FRandR	0.7	0.2	0.3	0.3	0.0	0.7	1.0	0.3	0.5	0.3	0.0	0.4	0.5	0.1	0.4	0.2

Patient 15		LAE 1														
Channels	GL29-29	GL29-30	GL30-31	GL31-32	GL32-33	GL33-34	GL34-35	GL35-36	GL36-37	GL37-38	GL38-39	GL39-40	GL40-41	GL41-42	GL42-43	GL43-44
Ripples	24.1	40.5	69.1	102.2	122.2	142.2	162.2	182.2	202.2	222.2	242.2	262.2	282.2	302.2	322.2	342.2
FR	2.9	3.3	2.9	3.7	4.1	3.7	2.8	4.2	4.2	2.9	2.1	2.9	2.9	2.9	2.9	2.9
FRandR	0.2	0.2	0.4	1.5	1.7	1.4	0.7	0.9	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0

Patient 16		LAE 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Channels	GR1-2	GR2-3	GR3-4	GR8-10	GR10-11	GR11-12	GR12-13	GR13-14	GR14-15	GR15-16	GR16-17	GR17-18	GR18-19	GR19-20	GR20-21	GR21-22	GR22-23	GR23-24	GR24-25	GR25-26	GR26-27	GR27-28	GR28-29	GR29-30	GR30-31	GR31-32	GR32-33	GR33-34	GR34-35	GR35-36	GR36-37	GR37-38	GR38-39	GR39-40	GR40-41	GR41-42	GR42-43	GR43-44	GR44-45	GR45-46	GR46-47	GR47-48	GR48-49	GR49-50	GR50-51	GR51-52	GR52-53	GR53-54	GR54-55	GR55-56	GR56-57	GR57-58	GR58-59	GR59-60	GR60-61	GR61-62	GR62-63	GR63-64	GR64-65	GR65-66	GR66-67	GR67-68	GR68-69	GR69-70	GR70-71	GR71-72	GR72-73	GR73-74	GR74-75	GR75-76	GR76-77	GR77-78	GR78-79	GR79-80	GR80-81	GR81-82	GR82-83	GR83-84	GR84-85	GR85-86	GR86-87	GR87-88	GR88-89	GR89-90	GR90-91	GR91-92	GR92-93	GR93-94	GR94-95	GR95-96	GR96-97	GR97-98	GR98-99	GR99-100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
RIPs	78.1	54.3	75.8	8.2	25.5	79.9	148.7	158.8	88.3	119.0	136.1	165.1	194.7	210.5	191.8	148.3	121.4	193.4	163.7	141.2	60.2	73.3	80.1	116.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				</