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Introduction

limited by Surface EEG often movement İS artifacts, suppression of high frequencies and low spatial resolution. Therefore non-invasive recordings do not always reveal a precise identification of the seizure onset zone especially in patients with non-lesional epilepsy. Invasive subdural strip electrodes allow for a better identification of the seizure onset zone. A semiautomatic evaluation of ictal activity and propagation clinicians EEG performing video may support monitoring.

Method

Invasive subdural strip electrodes were implanted to record electrocorticograms (ECoGs) during video EEG monitoring in a drug-resistant patient with focal epilepsy. The patient suffered from four seizures during invasive recording. A novel software was designed for automatic analysis.



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Seizure propagation analysis via segmentation of ictal ECoG

This method consists of three steps:

- bands.
- Classification: program.
- Seizure red ECoG segments)

Results

Three seizures were analyzed using this novel segmentation method. Seizure onset on individual channels and propagation as detected with this method was well correlated with the visual analysis of ECoGs:

Seizure	Investigator	Initial electrodes	Close follow-up
1	Algorithm	B8	A10, A11, A12
	Expert 1	B8	A10, A11, A12
	Expert 2	A11, A12, B8	A9, A10, B7
	Expert 3	A10, A11, A12	B8
2	Algorithm	A10, A11, A12	B6, B8
	Expert 1	A11, A12	A9, A10
	Expert 2	A11, A12	A10
	Expert 3	A11, A12	B8
3	Algorithm	A10, A11, A12	B6, C1, C2, C5
	Expert 1	A9, A10	A8, A11, A12, B6, B7, B8, C1, C4, C5
	Expert 2	A9	A1, A2, A3, C2, C3
	Expert 3	A8, A9	A1, C3, C4, C5

Conclusion

This pilot study shows promising first results in tracking the initial propagation of ictal theta-activity as an indicator for seizure propagation.

Segmentation of individual ECoG channels on the basis of power changes in selected frequency

Each segment was evaluated automatically with regard to the predominant frequency. Segments with a predominant theta frequency were categorized as ictal activity by this

Propagation: This was defined as propagation of rhythmic theta-activity (marked as

A1	- manufacture and a second and
A2	- the man war have been and the war
A3	and the many and the second and the second and the second se
A4	waluu malaa ahaa ahaa ahaa ahaa ahaa ahaa aha
A5	www.www.www.www.www.www.www.www.www.ww
A6	Manument Manus and
A7	morner ware with all a solution of the ward that a solution of the solution of
A8	MMMmmmm, Marine Marine all all and a second and the
A9	Muchter warman and a second and a
410	warm my man and man and and and and and and and and and a
A11	-May way and a second and a sec
412	
B8	May and Manus and Ma Manus and Manus and
B7	man warmen warmen warmen war and
B6	mummum my war and more and
B5	an marine and a second and a
B4	have a second and a second a se
B3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
B2	
C5	man man and man and man and the second
C4	menter and a second a
C3	month and the second of the second
C2	
C1	www.www.www.www.www.www.www.www.
10:1	2.42 16:12:44

ECoG of seizure 1: Ictal activity as classified by the software is highlighted in red





