DANSK EPILEPSI SELSKAB
Danish Epilepsy Society

"Refractory Status Epilepticus"

Annual Meeting
&
General Assembly
Danish Epilepsy Society

Program

Thursday 23 March to Friday 24 March 2023

Hotel Comwell Middelfart,
Karensmindevej 3
5500 Middelfart

Organising committee

Christoph Beier
Neurologisk Afdeling, Odense

Elena Gardella
Epilepsihospitalet, Dianalund

Jakob Christensen
Neurologisk Afdeling, Aarhus

The meeting is supported by pharmaceutical and medico companies.

Meeting program

Thursday 23 March

09.45 - 10.20	**Registration & coffee**
10.20 - 10.30	**Welcome** *Jakob Christensen,* Chairman of the Danish Epilepsy Society
Chairperson:	**Chairman (Jakob Christensen)**
10.30 - 11.30	**New-onset refractory status epilepticus (NORSE)** *Nicola Specchio (Ospedale Pediatrico Bambina Gesu, Roma, IT)*
11.30 - 12.00	**Febrile-infection related refractory status epilepticus (FIRES)** Malene Landbo Borresen, Rigshospitalet, Copenhagen
12.00 - 12.30	**Refractory status epilepticus and auto-immune encephalitis** *Morten Blaabjerg, Odense University Hospital*
12.30 - 13.30	**Lunch**
Chairperson:	**Chairman (Annette Sidaros)**
13.30 – 14.00	**Prognostication of (refractory) status epilepticus** Christoph Beier, *Odense University Hospital*
14.00 - 14.30	**The EEG of refractory status epilepticus** Thorbjørn Søndergaard Engedal, Aarhus Universitetshospital
14.30 - 15.30	**Seizure in mitochondriopathies** Rhys Thomas, Wellcome Centre for Mitochondria Research, Newcastle, GB
15.45 - 16.15	***Coffee break***
16.15 - 17.15	**Lecture competition – for young researchers**
17.15 - 18.15	**General assembly**
19.00 -	***Dinner***

Friday 24 March

08.30 - 09.00	**Chairperson: Chairperson (Elena Gardella)**
09.00 - 09.20	**Superrefractory status epilepticus – a systematic review and meta-analysis of outcome and treatment approches** *Camilla Dyremose Cornwall, Odense University Hospital*
09.20 - 09.40	**Traumatic brain injury and the risk of epilepsy** *Kasper Lolk, Aarhus University*
09.40 - 10.00	**Genotype-fænotype korrelation og personlig medicinering ved monogene epilepsier** Allan Bayat, the Danish Epilepsy Hospital, Filadelfia, Dianalund
10.00 - 10.30	**Coffee Break**
10.30 - 11.30	**Danish Epilepsy Guidelines - updates** TBD
11.30 - 12.45	**Quality indicators in epilepsy - RKKP** Jakob Christensen Aarhus University Hospital and Mads Ravnborg, the Danish Epilepsy Hospital, Dianalund
12.45 - 13.00	**Concluding remarks**
13.00	***Lunch***

Abstract til foredragskonkurrence
DES´ årsmøde 2023

Presenter
Moshgan Amiri

Abstract title
EEG and fMRI to predict consciousness levels and functional outcomes of ICU-patients with acute disorders of consciousness

Authors
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Abstract til foredragskonkurrence
DES´ årsmøde 2023

ABSTRACT TEXT

Introduction

In ICU-patients with disorders of consciousness (DoC), accurate prediction of consciousness levels and functional outcome after ICU-discharge is essential to decision-making regarding level of care, neurorehabilitation, and management of family expectations. However current concepts are mainly based on chronic-DoC patients, while data from acute DoC patients are limited.

Methods

123 ICU DoC-patients (mean age 51 years, 42% woman) were assessed with EEG and fMRI. EEGs were analysed in three different ways; 1) visual analysis by two neurophysiologists, 2) automated spectral grading and 3) machine-learning based consciousness classifier. fMRI resting state functional connectivity was derived from 6 different networks. Machine-learning was applied to EEG- and fMRI features for outcome prediction, with results expressed as accuracy or Area Under the Curve (AUC [95% CI]) of Receiver Operating Curves. Predictors of earlier recovery were identified with a Cox-regression analysis.

Results

Of 82 ICU-survivors, 3- and 12-month outcomes were available from 77 patients. EEG and fMRI predicted consciousness levels at ICU-discharge with AUCs of 0.71 [0.77-0.809] and 0.64 [0.58-0.72], respectively. Combined EEG and fMRI features predicted consciousness levels with maximum AUC of 0.83 [0.75-0.89]. EEG features predicted both 3-month and 12-month outcomes with AUCs of 0.79 [0.77-0.82] and 0.74 [0.71-0.77], respectively. fMRI features only predicted 3-month outcome (accuracy 0.69-0.78). Predictors of earlier recovery were younger age (OR 1.04 [1.02-1.06]), TBI (1.94 [1.04-3.61]), early command-following (2.70 [1.40-5.23]), improving consciousness in the ICU (5.76 [2.41-15.51]), favourable brain imaging (2.42 [1.12-5.22]) and favourable visual EEG-grading (2.47 [1.46-4.19]).

Conclusion

EEG predicted consciousness levels at ICU-discharge equally well as fMRI. Additionally, EEG features predicted both 3- and 12-month outcomes, while fMRI features only predicted 3-month outcomes. Key clinical characteristics and favourable visual EEG grading predicted earlier recovery.

The Contribution of Early Seizures to Post-traumatic Epilepsy: Causal Mediation Analysis in a Nationwide Cohort with Moderate-to-Severe Traumatic Brain Injury from Denmark

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Introduction:
Early seizures after traumatic brain injury (TBI) is a predictor of post traumatic epilepsy (JAMA neurol. 2022;79(4):334-341) and may alter long-term seizure susceptibility (Epilepsia. 2007;48(s2):65-74). Human trials of antiseizure medication used after TBI proved effective against early but not late seizures. (Epilepsia. 2009;50 Suppl 2:10-13) Large register-based studies may be better powered to identify more subsinct effects. We studied whether and to what extent the effect of TBI on epilepsy may operate through early seizures.

Methods:
We performed a matched (5:1) cohort study of Danish residents registered with a moderate-to-severe TBI (msTBI) diagnosis in the Danish Nation Patient Register from 1995 to 2016. Diagnostic information from the register was used to identify msTBIs (ICD-10: S061-S069) and epilepsy (ICD-10: G40). Early seizures were characterized as seizures (ICD-10: R568, G40, G41) within two weeks of TBI (or index date among references). Study participants were followed from 14 days after TBI until onset of epilepsy, emigration, death, or the end of follow-up, whichever came first. Regression-based causal mediation analysis was applied to estimate the proportion of the effect of TBI on epilepsy that was mediated by early seizures.

Results:
In the study period, 39,917 persons sustained a msTBI and 188,450 were matched as references. Persons with TBI and references were comparable according to sex, age and entry date, but somatic and psychiatric conditions were more common among persons with TBI than references (Table 1). During follow up, 802 (2.12%) persons with TBI had an early seizure, and 3,567 (5,62%) developed epilepsy. Among references, only 11 (0.01%) had an early seizure diagnoses, and 1,437 (0.76%) developed epilepsy. The total hazard ratio of epilepsy after msTBI was 8.3 (95% CI 7.6-9.1), of which the proportion mediated was 12.5% (95% CI 11.8-13.2%).

Conclusion:
Our results suggest that early seizures may be implicated in the development of epilepsy following msTBI.

Funding:
This study was supported by the Novo Nordisk Foundation (grant numbers: NNF16OC0 019126 and NNF17OC0029860), the Central Denmark Region, the Danish Epilepsy Association.

Table 1 Characteristics of the study population with respect to traumatic brain injury (TBI)

	Matched References (N=188,450)		Persons with TBI (N=37,917)		p value
Epilepsy					< 0.001[1]
- Yes	1,437	(0.76%)	2,130	(5.62%)	
TBI severity					< 0.001[1]
- *No TBI*	188,450	(100.00%)	-	(0.00%)	
- *Extracerebral injury*	-	(0.00%)	19,411	(51.19%)	
- *Diffuse cerebral injury*	-	(0.00%)	15,248	(40.21%)	
- *Focal cerebral injury*	-	(0.00%)	3,258	(8.59%)	
Early seizure					< 0.001[1]
- *Yes*	11	(0.01%)	802	(2.12%)	
Psychiatric comorbidity					< 0.001[1]
- *Yes*	12,630	(6.70%)	5,190	(13.69%)	
CCI score					< 0.001[1]
-0	136,209	(72.28%)	20,792	(54.84%)	
-1	23,025	(12.22%)	7,598	(20.04%)	
-2	15,918	(8.45%)	4,078	(10.76%)	
-3	6,650	(3.53%)	2,460	(6.49%)	
-4	6,648	(3.53%)	2,989	(7.88%)	
Sex					0.842[1]
- *Male*	115,426	(61.25%)	23,245	(61.30%)	
Age					0.071[2]
Median	60		60		
(Q1, Q3)	(30, 77)		30, 77		
Year					0.666[2]
- *Median*	2007		2007		
(Q1, Q3)	2001, 2012		2001, 2012		

TBI, Traumatic brain injury; CCI, Charlson co-morbidity index

1. Pearson's Chi-squared test
2. Kruskal-Wallis rank sum test

Epi-Space – Rehabilitation of young adults with epilepsy

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Introduction

Patients with epilepsy face a number of complications besides seizures, including cognitive impairments and psychosocial challenges. These complications are particularly pronounced in young adults who are making significant decisions about their future and developing their identity. Nonetheless, current treatment does not systematically address these underlying complications. Epi-Space aimed to establish a treatment program for young adults with epilepsy that focused on documenting and addressing their underlying complications.

Methods

Epi-Space was implemented at Aarhus University Hospital in the Department of Neurology from 2021-2023 and included a total of 42 epileptic patients aged 18-30 years. During six consultations, patients underwent a neuropsychological evaluation and subsequent psychoeducation. Patients also received psychosocial counseling and support in strengthening the connection to their institution of education, commune, or workplace. In addition, the patients completed several standardized measures in their first and sixth consultations including the Hospital Anxiety and Depression Scale, the SF36 questionnaire, the Qolie31 questionnaire, the Liverpool Impact of Epilepsy Scale, and the Revised Liverpool Stigma Scale.

Results

The neuropsychological evaluation indicated that the vast majority of patients had cognitive impairments. The patient's verbal responses reflected an enhancement in their psychological well-being and a better sense of mastering live with epilepsy after completing the project. Moreover, 12 to 22 reported utilizing various cognitive tools, e.g. when negotiating new employment terms at their workplace. The outcomes from the questionnaires completed at the first and sixth consultations are still pending.

Conclusions

Epi-Space identified that cognitive impairments and psychosocial challenges are prevalent among young adults with epilepsy. This implies the widespread need to systematically address the underlying complications associated with epilepsy. The objective in the future is to implement these findings into the treatment paradigm of epileptic patients.

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