STATUS EPILEPTICUS AND NEUROLOGICAL PROGNOSIS IN POST-ANOXIC COMA.

A PROSPECTIVE STUDY IN THE ERA OF THERAPEUTIC HYPOTHERMIA.

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BACKGROUND. Most survivor from cardiac arrest (CA) sustained anoxic brain damage, characterized by severe disability, placing psychological and financial burdens on family and society.
After introduction of therapeutic hypotermia (TH) parameter for prediction of neurological outcome in post-anoxic coma, proposed by AAN in 2006, need to be reconsidered. Indeed TH improves neurological recovery and may potentially interfere with prognostication indices. Furthermore EEG has acquired an important role recently, but larger studies on its predictive value are needed.

PATIENTS AND METHODS. **Observational study** carried out in Intensive Care Unit at S.Gerardo Hospital in Monza. Our population consisted of **80 consecutive patients admitted for persistent coma following CA, treated with TH.**

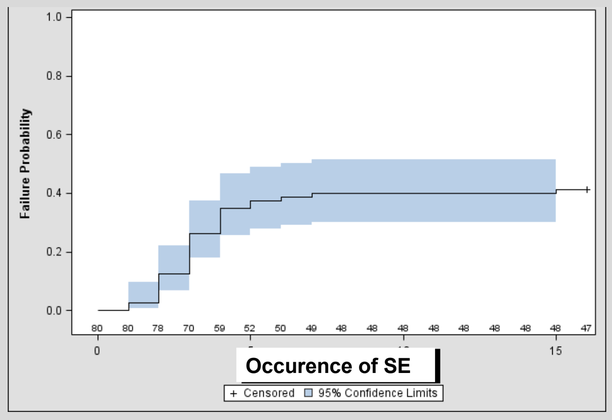
After passive rewarming, all patients had neurological examination and neurophysiologic tests, consisting on SSEP and EEG. Principal features of EEG (reactivity, background activity, presence of GPEDs or epileptic activity) were recorded. Patients with a clinical and an EEG pattern compatible with status epilepticus (SE) were treated with anesthetic and antiepileptic drugs for at least 24 hours and then reassessed.
Clinical and demographical data (including initial arrest rhythm, time of CA, SAPS II index- a system for predicting mortality, NSE level) were also collected. Some patient underwent neuroimaging.

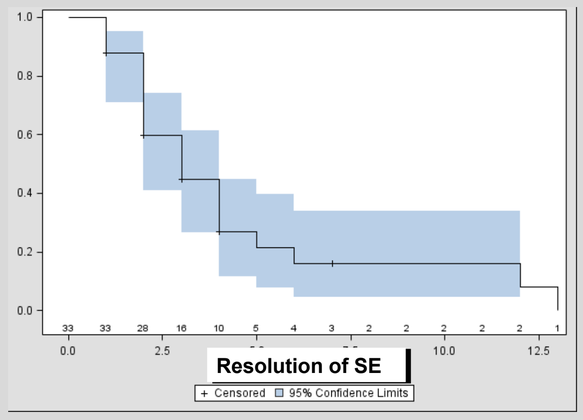
PURPOSES and RESULTS

1. Identification of **variables predicting poor neurological prognosis** at 3 months

2. **Description of SE** and research of **variables predicting SE**

	NEGATIVE OUTCOME (N. 44)	POSITIVE OUTCOME (N. 36)			
	N.	N.	P-VALUE	FPR %	IC %
EEG reactivity absent	32	9	<0.0001	25	12.1-42
EEG reactivity present	12	27			
Discontinuos EEG	17	5	0.0224	13.9	4.7-29.5
Continuos EEG activity	27	31			
Discontinuos EEG e no react.	13	2	<0.0001	5.5	0.7-18.7
Continuos EEG or reactivity pres	31	34			
Status epilepticus	21	12	0.1932		
NO Status epilepticus	23	24			
GPEDs	10	0	0.0017	0	0.0-9.0
No GPEDs	34	36			
SE or GPEDs	25	12	0.0361	33	18.5-51
No SE orGPEDs	19	24			
Papillary reflex absent	9	0	0.0035	0	0.0-9.0
Papillary reflex present	35	36			
N20 Absent	15	1	<0.0001	2.8	0.0-14.5
N20 Present	23	35			
Brain injury at imaging	13	1	<0.0001	3.7	0.1-19.0
No brain injury	12	26			
NSE > 65 mcg/L	18	5	0.0220	15.6	5.3-32.8
NSE < 65 mcg/L	25	27			





SE developed in 41 % of patients and had a mean duration of 3 days.

The occurrence and duration of **SE were not associated with a poor prognosis** and can lead a good neurological outcome if timely treated (36 % of SE patients had good outcome).

None of the tested variables consistently predicted the development of SE.

DISCUSSION AND CONCLUSION

The recognition of **specific EEG patterns** may significantly improves the prediction of poor neurological outcome in patients treated with TH after CA.

Our results indicate that **SE is a common and treatable neurological complications of CA and is not a predictor of poor prognosis.**

Multi-modal approach to prognostication after CA is recommended because of the absence of an “ideal” predictor (FPR=0%) and to avoid self-fulfilling prophecies.

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SIN - XLVI CONGRESSO NAZIONALE 10-13 OTTOBRE 2015 – GENOVA