Post ROSC Perfusion Index and survival after out-of-hospital cardiac arrest. An update of our results.

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Purpose. Prognostication after out of hospital cardiac arrest (OHCA) is still now an open issue. About this topic we have explored, for the first time, the potential role of the post ROSC peripheral perfusion index as a predictor of 30 days survival. Our aim was to confirm our preliminary results on a larger population.

Methods. We retrospectively evaluated the reports generated by the manual monitor/defibrillator (Corpuls by GS Elektromedizinische Geräte G. Stemple GmbH, Germany) used for cases of OHCA in which ROSC was achieved, from January 2015 to December 2017. The mean values of PI were automatically provided in the report every minute after ROSC and the mean value of 30 minutes of monitoring (MPI_{30}) was calculated. The duration of cardiac arrest, the type of presenting rhythm (shockable or not shockable) and the total amount of epinephrine administered were also computed.

2246 patients enrolled in the Pavia CARE from January 2015 to December 2016

In 1403 CPR has been attempted

299 with pre-hospital ROSC

124 patients with PI available for 30 minutes of monitoring

53 alive@ 30 days

71 dead @ 30 days

Results. On 2246 OHCA enrolled in our provincial cardiac arrest registry (Pavia CARE) a resuscitation was attempted in 1403 cases and a ROSC was achieved in 241. The mean value of PI during 30 minutes of monitoring (MPI_{30}) after ROSC was available in 124 patients. Survived patients showed significantly higher values of MPI_{30} [1.4 (95%CI 0.9-2.7) vs 1 (95%CI 0.8-1.3) $p=0.02$]. At multivariable Cox regression model MPI_{30} was an independent predictor of death at 30 days [HR 0,8 (95%CI 0.6-0.98) $p=0.036$]. Moreover, patients with value of $MPI_{30} \geq 2,5$ showed a better 30 days survival [HR 2,1 (95%CI 1.2-3.6) $p=0.017$]. An inverse correlation was found between the total amount of epinephrine administered corrected for the duration of cardiac arrest and the MPI_{30} (Spearman's Rho -0.3 $p<0.01$).

Cox univariable model for death @ 30 days

Variable	HR	95% CI	P
MPI_{30}	0,85	0,7- 0,99	0,09
PI@1 min	0,94	0,8-1,1	0,31
PI@10 min	0,9	0,8-1	0,19
OHCA duration (min)	1,01	1,01 - 1,03	<0,001
Non shockable rhythm	4,14	2,4 -7,1	<0,001
SBP (mmHg)	0,99	0,98-1	0,15
DBP (mmHg)	0,99	0,98-1	0,38

MPI_{30} : 30 minutes monitoring mean value of PI
OHCA: out-of-hospital cardiac arrest
SBP: systolic blood pressure; DBP: diastolic blood pressure

Cox multivariable model for death @ 30 days

Variable	HR	95% CI	P
MPI_{30}	0,8	0,7- 0,99	0,036
OHCA duration (min)	1,01	1,01 - 1,03	0,009
Non shockable rhythm	4,44	2,6 -7,7	<0,001

MPI_{30} : 30 minutes monitoring mean value of PI
OHCA: out-of-hospital cardiac arrest
SBP: systolic blood pressure; DBP: diastolic blood pressure

Low perfusion

emitted light ~ received light

Good perfusion:

received light < emitted light

Conclusions. Our results confirmed on a larger population the potential role of peripheral perfusion index as a predictor of 30 days survival after an out-of-hospital cardiac arrest.

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