Should we bury the use of epinephrine in out-of-hospital cardiac arrest resuscitation ?

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Introduction: International guidelines provide a framework to the epinephrine use within out-of-hospital cardiac arrest (OHCA) care. Despite this consensus, the effectiveness and safety of epinephrine are challenged.

Purpose: The aim of our study is to assess the impact of epinephrine use on the survival rate and neurological outcome on a French population.

Material and methods: Our study was carried out on the French National Cardiac Arrest Registry (RéAC) between July 1st, 2011 and December 31st, 2017. We included 35,431 patients in our study. Analyses were separated according to the initial cardiac arrest rhythm. After matching on propensity score, we created 487 pairs of patients for shockable rhythm and 1,843 for non shockable rhythm.

Results:

Shockable rhythm – OR (95% CI)		Endpoints	Non shockable rhythm – OR (95% CI)	
Favor no epinephrine	Favor epinephrine		Favor no epinephrine	Favor epinephrine
	0.174 [0.139;0.218]	ROSC – Unadjusted		1.990 [1.758;2.253]
	0.378 [0.281;0.508]	ROSC – Adjusted		1.889 [1.608;2.219]
	0.150 [0.120;0.188]	D0 Survival – Unadjusted		1.542 [1.355;1.756]
	0.377 [0.282;0.504]	D0 Survival – Adjusted		1.703 [1.439;2.015]
	0.079 [0.065;0.096]	D30 Survival – Unadjusted		0.287 [0.236;0.349]
	0.216 [0.165;0.283]	D30 Survival – Adjusted		0.285 [0.199;0.409]
	0.244 [0.151;0.394]	D30 CPC 1-2 – Unadjusted		0.244 [0.120;0.420]
	0.478 [0.248;0.921]	D30 CPC 1-2 – Adjusted		0.149 [0.061;0.359]

Conclusion: Our study highlights a short-term benefit of epinephrine use in non shockable patients. Nevertheless, whatever the rhythm, epinephrine seems to have a deleterious effect on neurological outcome in survivors. These results underscore the need to carry out further investigations on this subject such as randomized studies in order to answer the question: “how to use epinephrine?” to reduce 30-days deleterious effects.