Epinephrine and non-shockable rhythm: Is there a difference between pulseless electrical activity and asystole?

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Purpose of the study: In resuscitation international guideline, no distinction are made between asystole and pulseless electrical activity (PEA). However, these rhythms have their physiopathology specificities, hence they differently respond to treatments. The aim of our study is to investigate the association between survival and neurological outcome in out-of-hospital cardiac arrest (OHCA) patients with asystole and PEA.

Materials and methods: This study was based on the French national OHCA registry between 2012 and 2018. In each group (asystole and PEA), patients who benefited from an epinephrine injection and patients who did not were compared before and after propensity score matching.

Results: Among the 35,217 included patients, 31,995 presented an asystole and 3,222 a PEA. After matching, 1,980 pairs of patients were created in the asystole group and 178 in the PEA one.

As shown in the figure, in patients with asystole, epinephrine seems to improve rates of return of spontaneous circulation (ROSC) and D0 survival (hospital admission) (respectively OR = 2.696 (2.276; 3.193) and OR = 1.929 (1.614; 2.306)). On D30 survival and neurological outcome, epinephrine seems to have deleterious effects (OR D30 survival = 0.330 (0.217; 0.501) and OR CPC1-2 = 0.077 (0.010; 0.588)). In the PEA group, we observed that epinephrine increased the ROSC rate, and D30 survival rate (OR = 1.625 (1.046; 2.524) and OR = 7,667 (2,302;25,534)). There was no difference in survival on D0 and neurological outcome (OR = 1.079 (0.694, 1.678) and OR = 0.300 (0.083, 1.090)).

Conclusions: Epinephrine seems to improve survival in PEA patients but no in asystole patients. These first results may not justify separating these rhythms for this problem.

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