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Letter to the Editor

Pharmacotherapy during cardiac arrest—When evidence-based data failed to be implemented in clinical practice guidelines

Sir,

The recent publication of the 2017 update on the European Resuscitation Council's (ERC) Guidelines for Resuscitation stresses the scale and pace of new findings in resuscitation science [1]. This progress is regularly being summarized by the International Liaison Committee on Resuscitation (ILCOR) that emphasizes the importance of a continuous data review in order not to delay the implementation of new guideline suggestions. With this year's update the ILCOR-statement did not give the ERC grounds to build new suggestions concerning advanced life support (ALS) on. The updated ERC guidelines concentrate on BLS, pediatric care and ventilation, however not addressing the controversially discussed topic of pharmacotherapy during ALS [1].

Level of evidence in literature

The routine administration of epinephrine and amiodarone still seem to be set in stone although once again challenged by new scientific data. While results of the PARAMEDIC-2-trial comparing epinephrine to placebo are still not available, continuous reports suggest only limited benefit of the routine use of epinephrine during resuscitation. While epinephrine may enhance the likelihood of return of spontaneous circulation (ROSC) in patients with cardiac arrest, both large cohort studies and randomized controlled trials (RCTs) proved to have no effect on survival to hospital discharge or favorable neurological outcome [2]. Of alarming importance, recent data were even able to demonstrate that the cumulative dose of epinephrine during resuscitative attempts is associated with an increased likelihood of poor neurological outcomes [3]. A recent study on the effects of epinephrine on cerebral oxygenation (rSO2) during resuscitation gives a possible explanation, stating that epinephrine did not beneficially influence rSO2 levels [4]. Moreover, data on the effect of epinephrine on long-term survival remain scare and inconclusive.

Similar results apply for the use of Amiodarone in patients with cardiac arrest and shock-refractory ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT). In a large, double-blind RCT of the Resuscitation Outcomes Consortium Investigators, neither amiodarone nor lidocaine resulted in a significantly higher rate of survival to hospital discharge or favorable neurologic outcome than the rate with placebo among patients with shock-refractory VF or pVT [5].

Primum non nocere

The current treatment recommendations of the ERC guidelines on adult advanced life support are mainly based on underpowered observational trials. However, since the publication of those guidelines in 2015, several highly powered trials with a strong level of evidence are now available in literature. Of note, those trials were not mentioned in the 2017 update. Moreover, there is no evidence of the effect of both Epinephrine and Amiodarone on the patient outcome from a long-term perspective that proves their safety and justify an application. Since recent data highlighted no therapeutic benefit of Amiodarone on survival to discharge and even proved an inverse effect on favorable neurological outcome of Epinephrine, the recommended pharmacological treatment approach during resuscitative attempts needs to be questioned in a critical fashion within future guidelines on adult advanced life support.

Conflict of interest

None.

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None.

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