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Poster presentation

End-tidal CO_2 in mechanical versus conventional CPR

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Introduction

Out-of-hospital cardiac arrest (OHCA) generally has a poor prognosis. The development and use of a mechanical chest compression device has been suggested as a measure to achieve sufficient and continuous cardiopulmonary resuscitation (CPR). The mechanical chest compression device (Autopulse®) consists of a battery-driven board with a band attached that applies a 20% anterior-posterior compression of the patient's thorax at a frequency of 80 per minute. The aim of this study was to compare patients treated with the mechanical chest compression device (Autopulse®) with patients treated with conventional CPR. End-tidal CO_2 (ETCO2) was used as a qualitative measure of circulation. We hypothesized that patients treated with Autopulse® had a higher ETCO2.

Methods

The study was conducted as a retrospective study. The patients included had OHCA and were treated by the mobile emergency care unit in Copenhagen in 2007. Only intubated patients with at least one registered ETCO2 value were included. The treating physician prospectively recorded data in a database. If patients had more than one CO_2 value registered we analyzed both their median and maximum CO_2 values. The two groups were compared using the mean values (standard deviation) of either the median or max CO_2. Mann-Whitney rank sum test was used for statistical analysis.

Results

In total, 491 patients had cardiac arrest, of those 158 where intubated and had at least one CO_2-value. 91(67,6%) patients with a mean age of 63 (15.3) were treated with Autopulse®, and 67 (42,4%) aged 64.7 (17.4) with conventional CPR. The mean values of both the median and the max CO2 did not differ between the two groups: 4,4 (2,0) kPa vs. 4,8 (2,0) kPa (p = 0.63) and max CO_2 4,9 (2,2) kPa vs. 5,3 (2,4) kPa (p = 0.89), respectively.

Conclusion

We were not able to detect a significant difference between Autopulse® and conventional CPR in the amount of CO_2 expired. However, the study has multiple weaknesses and further investigations are proposed. Whether or not Autopulse® should be preferred in daily use depends on survival and neurological outcome in future studies.