Impact of Emergency Medical Service arrival time and initial arrest rhythm on return of spontaneous circulation (ROSC) after out-of-hospital cardiac arrest: the experience of the province of Lecce, Italy.

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Introduction

Out-of-hospital cardiac arrest (OHCA) is a major cause of death and disability worldwide. In 2013, the Territorial Emergency Medical Service (EMS) of Lecce, a public service operating in an Italian province of 814,495 inhabitants, developed an OHCA registry. The present study aims to evaluate the relationship between EMS arrival time, shockable rhythms and return of spontaneous circulation (ROSC).

Materials and methods

All OHCA cases from 1st January 2013 and 31st December 2017 in Lecce OHCA registry were assessed. Data were collected chronologically by the ambulance crew and included patient characteristics (age and sex), arrest features, EMS response times, treatment and patient outcomes (ROSC or death).

Results

4203 OHCA cases of EMS treated cardiac arrests were recorded in the study period (103 per 100,000 of resident population per year), with a survival rate at hospital transfer of 4.5%. Asystole was the most common cardiac arrest rhythm (87.2%), while ventricular fibrillation or tachycardia (VF/VT) and pulseless electrical activity (PEA) were observed for 9.4% and 3.4% of cases, respectively. Relative to ROSC cases, the percentage of shockable rhythms raised to 54.1%. mean EMS response times (mm:ss) were 11:37 for shockable rhythms with ROSC, 13:31 for shockable rhythms with death, 13:31 for non-shockable rhythms with death, 12:58 for non-shockable rhythms with ROSC and 16:12 for non-shockable rhythms with death. ROSC cases with VF/VT were assisted in less time than the others (**Figure 1**).

Conclusion

According to Lecce OHCA registry, survival rate after OHCA is low. Initial arrest rhythm can influence the outcome, since most ROSC cases are represented by shockable rhythms. ROSC cases after VF/VT were associated with the shorter EMS arrival time, thus suggesting that an early assistance could increase the possibility to find a shockable rhythm and to improve survival rate.

Figure 1. ROSC after shockable rhythm is associated to a shorter EMS arrival time.