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EARLY COMPRESSION-ONLY CARDIO PULMONARY RESUSCITATION PERFORMED BY BYSTANDERS UNDER TELEPHONE INSTRUCTIONS DOUBLES RETURN OF SPONTANEOUS CIRCULATION RATE IN OUT-OF-HOSPITAL CARDIAC ARRESTS.

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Editor,

Cardiopulmonary Resuscitation (CPR) performed by bystanders has been shown to improve survival in out-of-hospital cardiac arrests, starting at any time before defibrillation. ^(1, 2)

Not by chance, the 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations (CoSTR) emphasizes, as a determining factor for the survival rate, the possibility of compression-only CPR performed by untrained people under instruction provided over the telephone by the emergency medical services (EMS) dispatcher before the EMS arrival. ⁽³⁻⁵⁾

We present the results of an observational retrospective study on compression-only CPR performed by bystanders under telephone guidance, in order to evaluate the efficacy in terms of return of spontaneous circulation (ROSC) and survival. This study includes adult patients who underwent out-of-hospital cardiac arrest in 2017, due to any origin, and rescued by EMS of Taranto, Italy.

In relation to the nature of the study, analyzing a such unpredictable sample (cardiac arrests) it was impossible to obtain an enrolment including consent signatures. Nevertheless, all the data are presented anonymously.

Two groups were compared: Group 1 received compression-only CPR by untrained bystanders under telephone instructions while Group 2 did not receive any CPR before the arrival of EMS because of the bystanders inability or rejection. In this case, the bystander decision was expressed and recorded by telephone interview.

Any patient receiving bystander CPR without telephone instruction was recorded by EMS at its arrival and excluded from the study. Paediatric population was excluded too.

For each group the ROSC and hospital discharge rates were recorded. Data are expressed in numbers and percentages and Chi-Square test was applied to compare the groups.

In 2017 the total cardiac arrests rescued by the EMS of Taranto were 494, out of which 229 (46.3%) were included in group 1 while 265 (53.64%) were included in group 2.

The total number of patients who returned to spontaneous circulation was 29 (5.5%).

The ROSC number of patients was significantly higher in Group 1 (8.3% vs. 3.8%; $p < 0.05$). (Tab. 1)

Moreover, the percentage of patients discharged alive was higher in Group 1 (3% vs. 0.37%) and also this difference was found to be statistically significant ($p < 0.05$).

These are the first official data regarding Cardiopulmonary Resuscitation performed by bystanders under telephone instructions in Italy.

This study highlights two fundamental aspects concerning the appropriate management of the patient with cardiac arrest by EMS:

- 1) In more than half of the cases (53.64%) the patient with cardiac arrest did not receive CPR by bystanders, and this does not comply with the international recommendations.

The absence of CPR performed by bystanders was explained as follows: In 94 cases the patient had a cardiac arrest immediately after the call to EMS and the bystanders did not call the EMS again to report the arrest; in 115 cases the patient's gasping was not recognized and not communicated to the EMS dispatcher during the call; in 26 cases CPR was dictated by the EMS dispatcher on call but the bystanders refused to perform it, due to emotional unwillingness to cooperate or because they feared to cause injuries to the patient; in 18 cases the CPR was not dictated by the EMS dispatcher for non-observance of the protocols or because it was considered non indicated, as in case of terminal ill patients; in 12 cases CPR was not dictated because the caller was not on the scene.

- 2) The immediate CPR, performed with the technique of chest compression-only CPR, under the telephone dictation, increased more than twice the percentage of return of spontaneous circulation, and this is in accordance with CoSTR 2015 recommendations.

By our data, it emerges the need to increase the percentage of patients receiving immediate compression-only CPR by people not previously trained to standard CPR before the EMS arrival.

For such reason, it is necessary to define criteria of greater accuracy which allows EMS dispatchers to recognize gasping and properly activate the telephone dictation of CPR.

Furthermore, another important goal is surely to promote the culture of Basic Life Support among the general population in order to overcome the reluctance of bystanders to perform chest compressions to victims of cardiac arrest.

In conclusion, our experience demonstrates that compression-only CPR performed by bystanders under telephone guidance in out-of-hospital cardiac arrests doubles the probability of return to spontaneous circulation and increase significantly the survival rate.

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LEGENDS TO FIGURE

TABLE 1 – Results

In the table are summarized the rate of out-of-hospital cardiac arrests, ROSC (Return of spontaneous circulation) and survival rate, divided in groups: group 1 includes patients who received compression-only CPR by untrained bystanders under telephone instruction. Group 2 includes patients who didn't receive any CPR until EMS arrived.

n: number of patients; p: p-value

Conflict of interest

The authors deny any conflict of interest related to this article.

TABLE 1 – RESULTS

	<i>GROUP 1 (n = 229)</i>	<i>GROUP 2 (n = 265)</i>	<i>p</i>
<i>ROSC</i>	19 (8.3%)	10 (3.8%)	0.038
<i>SURVIVAL</i>	7 (3%)	1 (0.4%)	0.019