

Did we Improve Survival after OHCA in Vienna? Two Trials - Five Years apart

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Background

While out-of-hospital cardiac arrest (OHCA) is still one of the major causes of death in the western world, survivors are rare and outcome is usually poor. To improve this, the European Resuscitation Council (ERC) publishes new guidelines every five years. The purpose of this study was to see, whether we are able to improve survival over the years.

Methods

Over the last few years two different groups of researchers observed the survival and neurological outcome of victims of OHCA in Vienna. Nürnberger et al. recorded incidence and outcome of the years 2009 and 2010, and another group observed a 24-months period over the years 2013 to 2015. While in the first time period 1449 patients have been resuscitated by local Emergency Medical Services (EMS), in the second period there have been 2151 interventions. Both studies included patients aged >18 years with non-traumatic OHCA with attempted cardiopulmonary resuscitation by a professional EMS crew. As primary endpoints 30-day-survival and neurological outcome, measured in Cerebral Performance Category (CPC), have been chosen.

Parameter	CIRC	QCPR	p-Value
Witnessed, n (%)	916 (55)	1232 (57.0)	0.115
Bystander CPR, n (%)	689 (41)	1204 (56)	0.001
First recorded Rhythm, n (%)			
VF, VT	493 (30)	556 (26)	0.014
Asystole	532 (32)	832 (39)	0.001
PEA	349 (21)	703 (33)	0.001
Unknown	299 (18)	58 (3)	0.001
Time to first medical contact, minutes	10:29 ± 5:45	7:47 ± 3:32	0.001

Figure 1: CIRC vs. QCPR Data

Results

From study phase one to study phase two, 30-day-survival increased from 11.3% e.g. 17.2% (181 vs. 372, $p=0.001$) and survival with favorable neurological outcome, e.g. CPC 1 or 2, improved significantly from 8.7% to 12.6% (129 vs. 269, $p=0.001$). Bystander resuscitation rose drastically from 41% to 56% (689 vs. 1204, $p=0.001$) and time to first medical contact decreased significantly from 10:29 ± 5:45 to 7:47 ± 3:32 minutes, $p=0.001$).

Parameter	CIRC	QCPR/VICAR	p-Wert
Sustained ROSC, n (%)	385 (26)	655 (31)	0.006
30-day-survival	181 (11)	372 (17)	0.001
CPC1/2, n (%)	129 (8)	269 (13)	0.001

Figure 2: Results in Comparison

Conclusion

While immigration, a higher level of public awareness and various preclinical first responder programs could play a big part in the increasing number of out-of-hospital cardio-pulmonary resuscitations, changes in the ERC guidelines in the year 2010, with focus on lay-helper resuscitation, early defibrillation and minimized hands-off-times are probably responsible for a significantly better survival in quantity and quality in Vienna.

References

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