Mechanical CPR with a load distributing band device in out-of-hospital cardiac arrest. An Utstein categories based analysis

Simone Savastano, MD; Enrico Baldi, MD; Alessandra Palo, MD; Maurizio Raimondi,MD; Mirko Belliato,MD; Sara Compagnoni, MD; Fabrizio Canevari,MD; Giorgio Iotti,MD; Gaetano M. De Ferrari, MD; Luigi Oltrona Visconti,MD.

Purpose. . In a randomized clinical outcome study of out of hospital cardiac arrest (OHCA), the load distributing band device (LDB, AutoPulse®, Zoll Medical Corporation, Chelmsford, MA, USA) did not improve survival to hospital discharge compared to high quality manual CPR. Few studies have explored the effect of the LDB device in standard clinical use with conflicting results. We sought to assess whether the use of the LDB device could affect survival to hospital discharge in the different Utstein categories.

Methods. All consecutive patients enrolled in our provincial cardiac arrest registry (Pavia CARe) from January 2015 to December 2017 were included and pre-hospital data were computed as well as survival to hospital discharge.

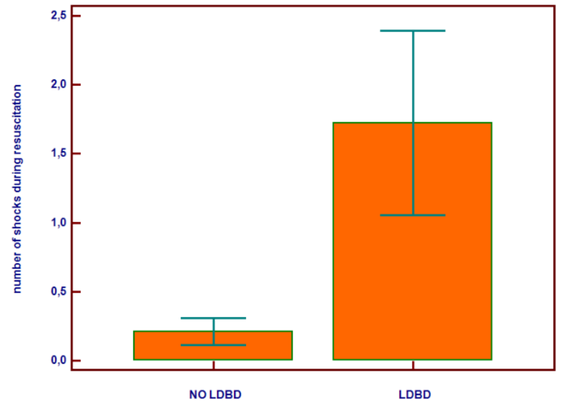
Results: Among 1403 resuscitation attempts the LDB device was used in 235 (18%) patients. Survival to hospital admission and discharge in the LDB group compared to the manual group was 30% vs 14% (p<0.001) and 10% vs 7% (p=0.2), respectively. The LDB device was significantly more used for shockable cardiac arrest (38% vs 12%, p<0.001). LBD use was a strong independent predictor of survival to hospital discharge for witnessed non-shockable OHCA [n=624/1403, OR 10.5 (95%CI 1.3-82.2) p=0.028]. For witnessed shockable cardiac arrest and for non-witnessed and non-shockable cardiac arrest the use of a LDBD was not associated with an increased survival neither to hospital admission nor to hospital discharge.

Conclusions. Utstein categories-based analysis showed that the LDB device positively affect survival to hospital discharge for witnessed non-shockable cardiac arrests but not for shockable arrest and non-witnessed non-shockable arrests.

Baseline characteristics

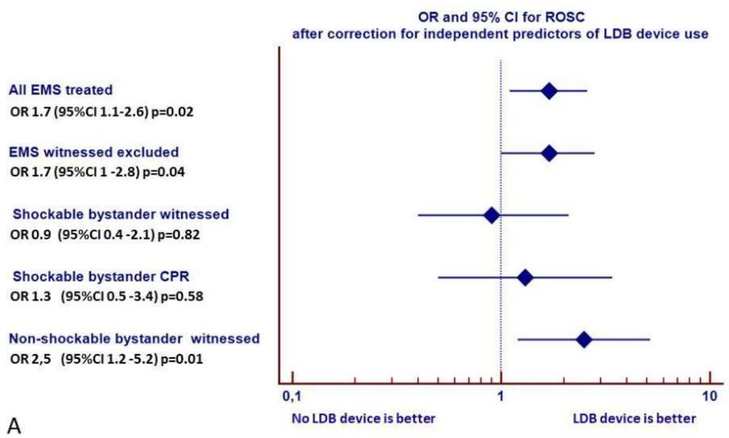
Variable	Overall n= 1403	LDB device n= 235	No LDB device n=1168	p
Male gender (%)	844 (60)	197 (83)	647 (55)	<0.001
Age, median(IQR) (years)	77 (65-85)	63 (52.3-71)	80 (68-86)	<0.001
Medical etiology (%)	1304 (93)	223 (95)	1081 (93)	0.29
Home location (%)	1111 (79)	177 (75)	934 (80)	0.12
EMS witnessed event (%)	236 (17)	43 (18)	193 (16)	0.76
Witnessed event (%)	1022 (73)	203 (86)	819 (70)	<0.001
Any bystander CPR (%)	472 (33.7)	121 (51.4)	351 (30)	<0.001
Shockable rhythm (%)	260 (18.6)	100 (42.6)	160 (13.7)	<0.001
EMS response time, median (IQR) (min)	10.7 (8-14)	10.4 (7.6-14)	10.8 (8-14)	0.53
Resuscitation time, median (IQR) (min)	27 (16-42)	51 (36-71)	23.9 (15.2-35.6)	<0.001
ROSC (%)	298 (21)	95 (40)	203 (17)	<0.001
Survived event (%)	240 (17)	71 (30)	169 (14)	<0.001
Survival to hospital discharge (%)	106 (7)	23 (10)	83 (7)	0.203

Medical etiology according to Utstein recommendations 2014; EMS response time: from the emergency call to the arrival of the first emergency team; Resuscitation time: from the arrival of the first emergency team to the end of ACLS.

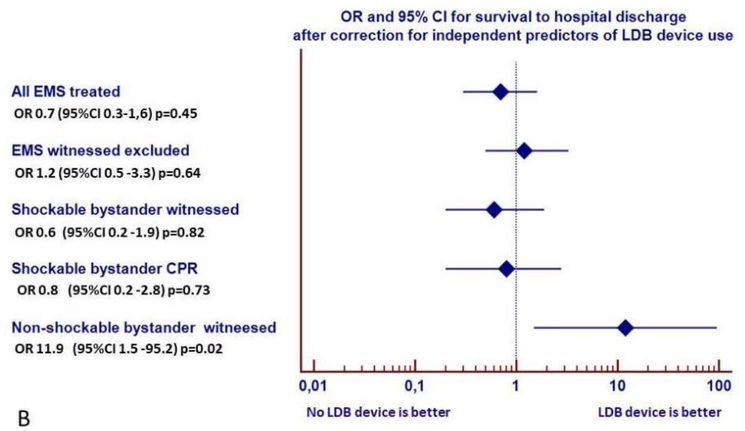


Multivariable logistic regression model for use of LDB device

Variable	OR	95%CI	p
Age	0,97	0,96 - 0,98	<0.001
Shockable rhythm	2.7	1.8 - 4	<0.001
Male gender	2.3	1,5 - 3,6	<0.001
Witnessed event	1.9	1.2-3	0.007
Resuscitation time	1,04	1,03 - 1,05	<0.001
Bystander CPR	1.7	1.2-2.5	0.003



A



B

RESUSCITATION 2018
New technologies in resuscitation
20 - 21 - 22 September • Bologna • Italy

This could be a place for your sources.