Endotracheal intubation is not associated with increased chest compression fraction during out of hospital cardiac arrest. A Post-hoc analysis of a single center high resolution arrest management data from the CAAM study.

S. Malinverni[1], M. Bartiaux[1], F. Cavallotto[1], D. De Longueville[1], P.Mols[1], F. Adnet[2].
[1] Centre Hospitalier Universitaire Saint Pierre, 1000 Bruxelles, Belgium
[2] Urgences et Samu 93, AP-HP, Hôpital Avicenne, Inserm U942, 93000 Bobigny, France

Introduction

Endotracheal intubation during out of hospital cardiac arrest (OHCA) resuscitation is still a debated measure. While being associated with increased chest compression fraction (CCF) during in hospital cardiac arrest endotracheal intubation has never been proved superior to bag valve mask ventilation during OHCA in terms of CCF.

Purpose of the study

The purpose of our study is to investigate whether endotracheal intubation is associated with increased chest compression fraction during out of hospital cardiac arrest management.

Methods

The study was conducted by the prehospital medical team from CHU Saint Pierre in Brussels as part of a post-hoc analysis of the CAAM study[1], a randomized controlled trial randomizing patients to endotracheal tube (ET) versus bag valve mask (BVM) ventilation during arrest. We conducted a post-hoc analysis of high resolution data collected during the first 40 minutes of OHCA through a Corpulse 3. ECG recordings, audio recordings and when available, accelerometer recordings were analyzed to determine CPR quality.

.

Results

When analyzing the whole duration of the CPR we observed no differences in terms of CCF between patients treated with ETI compared to patients being ventilated through BVM only (0.9 vs 0.886; p=0.19).

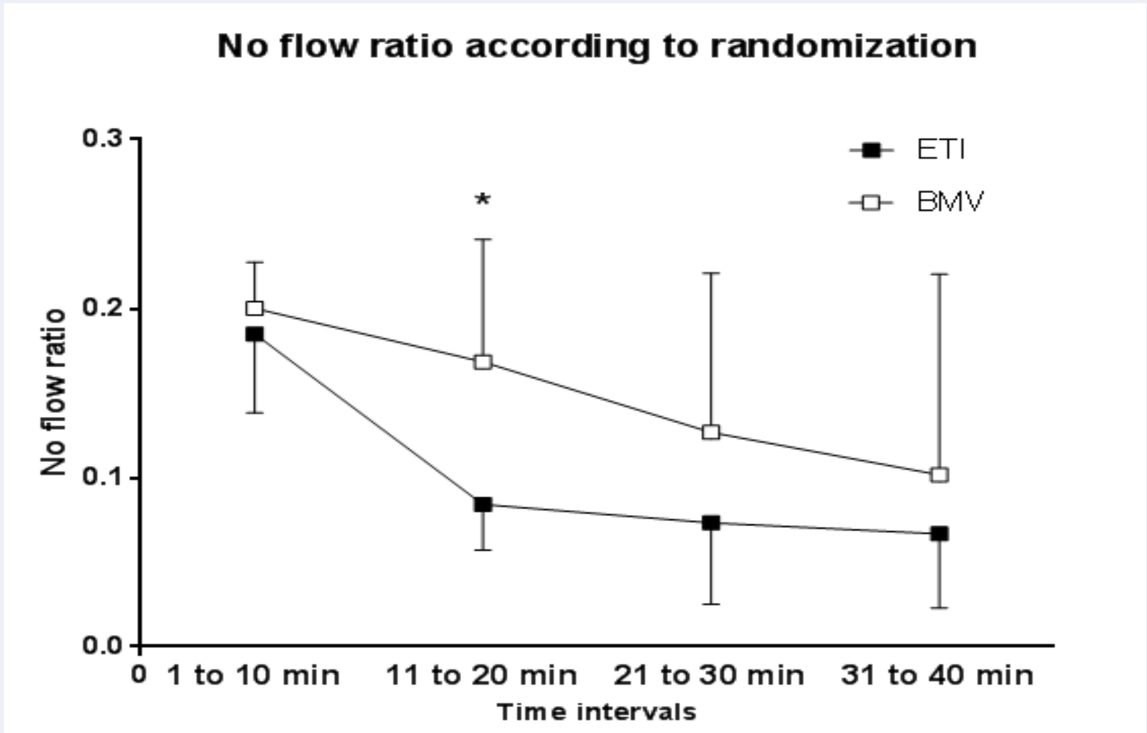

Fig 1. The impact of ETI on no-flowratio time.
The squares represent the median with error bars representing 25th or 75th percentile.
Abbreviations: ETI Endotracheal intubation, BMV Bag Mask Ventilation

When analyzing the intervention by 10 minutes intervals we observed that CCF was significantly higher in the ET group from the 11th minute until the 20th minute (0.903 vs 0.821; p<0.001) (Fig. 1).

When analyzing the intervention cycle by cycle we observed a significant lower CCF in patients randomized to ET versus patients randomized to (BVM) during the first cycle (0.743 vs 0.810 p=0.02). Finally we observed that patients randomized to ET had significant higher durations of chest compressions pauses associated to LUCAS placement (23.6 vs 33.7 p=0.02) (Fig 2) and rhythm analysis (81.1 vs 67.7; p=0.02) (Fig 3).

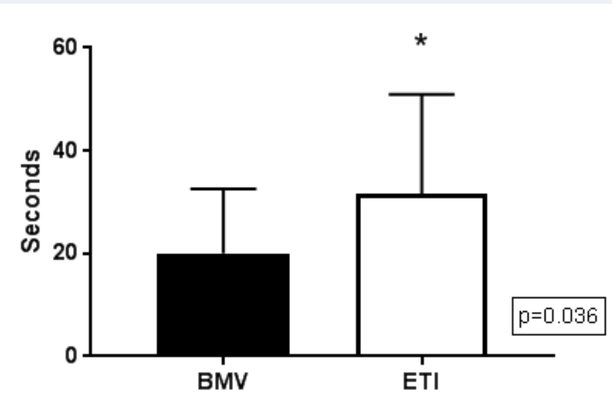

Fig 2. No flow time associated with LUCAS placement

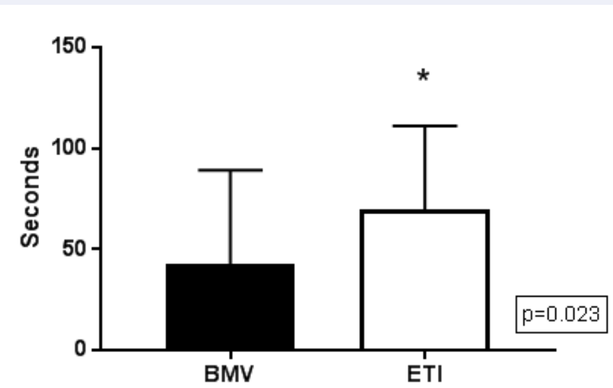

Fig 3. No flow time associated with rhythm analysis

Conclusion

ETI during OHCA is not associated with an increase in CCF.

1. Jabre P, Penaloza A, Pinero D, Duchateau FX, Borron SW, Javaudin F, et al. Effect of bag-mask ventilation vs endotracheal intubation during cardiopulmonary resuscitation on neurological outcome after out-of-hospital cardiorespiratory arrest a randomized clinical trial. JAMA - J Am Med Assoc. 2018;319(8):779–87.

ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS

CHU St-Pierre | UMC St-Pieter