

Emergency Medical Services Congress 2019 Abstracts

1 SOILED AIRWAY TRACHEAL INTUBATION AND THE EFFECTIVENESS OF DECONTAMINATION (SATIATED) BY PARAMEDICS: A RANDOMISED CONTROLLED MANIKIN STUDY

¹R Pilbery*, ²MD Teare. ¹Yorkshire Ambulance Service NHS Trust, UK; ²University of Sheffield, UK

10.1136/bmjopen-2019-EMS.1

Background In more than 20% of out-of-hospital cardiac arrests, the patient's airway is soiled.^{1 2} If the airway cannot be cleared, the patient will die. A new method of clearing the airway, suction assisted laryngoscopy and airway decontamination (SALAD) has been developed, but it's not known whether this method can assist paramedics to intubate.³ This study aims to determine whether paramedics can intubate a simulated soiled airway more often on their first attempt, using SALAD.

Method A modified airway manikin, with the oesophagus connected to a reservoir of 'vomit' and bilge pump, was used to simulate a soiled airway. The intervention was a brief SALAD training session with a demonstration and opportunity to practice. Participants were randomly allocated into two groups: AAB who made two pre-training intubation attempts and one post-training attempt, and ABB, who made one pre-training and two post-training attempts, to adjust for improvement due to repetition.

Results 164 paramedics took part in the study. First-pass intubation success with and without SALAD was 90.2% and 53.7% respectively, a significant difference of 36.6% (95%CI 24%–49.1%, $p < 0.001$). The mean successful intubation time for each attempt and patient group (AAB and ABB) was as follows: 61.8 (95%CI 55.8–67.8) and 59.4 (95%CI 53.6–65.1) s on the first attempt, 50.8 (95%CI 45.7–55.9) and 51.5 (95%CI 48.6–54.4) s on the second attempt and 53.5 (95%CI 50.4–56.6) and 46.6 (95%CI 44.0–49.1) s on the third attempt.

Conclusion In this study, paramedics were able to intubate a simulated soiled airway on their first attempt, significantly more often when using the SALAD technique.

REFERENCE

- Voss S, Rhys M, Coates D, Greenwood R, Nolan JP, Thomas M, *et al.* How do paramedics manage the airway during out of hospital cardiac arrest? *Resuscitation*. 2014 Dec;**85**(12):1662–6.
- Simons RW, Rea TD, Becker LJ, Eisenberg MS. The incidence and significance of emesis associated with out-of-hospital cardiac arrest. *Resuscitation*. 2007 Sep;**74**(3):427–31.
- DuCanto J, Serrano KD, Thompson RJ. Novel Airway Training Tool that Simulates Vomiting: Suction-Assisted Laryngoscopy Assisted Decontamination (SALAD) System. *West J Emerg Med*. 2017 Jan;**18**(1):117–20.

Conflict of interest R. Pilbery is a research paramedic at Yorkshire Ambulance Service NHS Trust. MD. Teare has no conflicts of interest.

Funding This research was funded by a College of Paramedics small research grant.

2 AMBULANCE NON-CONVEYANCE TIME

¹F Malm, ^{1,2}E Höglund*, ¹A Elfström, ^{1,2}E Ohlsson-Nevo. ¹University Health Care Research Center, Faculty of Medicine and Health, Örebro University, Örebro, Sweden; ²Örebro University, Örebro, Sweden

10.1136/bmjopen-2019-EMS.2

Background The aim was to describe time consumption when patients are non-conveyed by the ambulance service. Ambulance assignments have increased over time worldwide and 16%–31% of the care seekers encountered by the ambulance service have been assessed as not being in need of its services. To meet this growing demand for ambulance services in relation to a limited amount of resources there is a need for prioritization. This study was conducted in the Region Örebro County, Sweden with a population of 295 000 spread over 8504 km². There are three emergency departments in the region with 90 000 visits a year. The ambulance service attends about 26 000 patients per year where about 10 percent were non-conveyed during the study period.

Method A prospective descriptive design and a consecutive sample was used. All ambulance journal data concerning time aspects on non-conveyed patients by the three ambulance departments in the Region, from February 2016 until February 2017, were included in the study.

Results A total of 2615 patients were included in the study, 50.0% male, 48.9% and 1.1% unknown. The age ranged between 0–99 years (mean 49.6 years). In total the mean non-conveyance time was 26 min, median 25 min (Q1=18, Q3=32, min 4 - max 169 min). Patients involved in traffic accidents took the least and patients with epistaxis the most amount of time to non-convey.

Conclusion The results might guide ambulance organizations and policy makers in revising non-conveyance guidelines so that the ambulance service can be available for patients with greater need of care.

REFERENCES

- Hjälte, L., Suserud, B. O., Herlitz, J., & Karlberg, I. (2007). Why are people without medical needs transported by ambulance? A study of indications for pre-hospital care. *European Journal of Emergency Medicine*, 14, 151–156. <https://doi.org/10.1097/MEJ.0b013e3280146508>
- Norberg, G., Wireklint Sundström, B., Christensson, L., Nyström, M., & Herlitz, J. (2015). Swedish emergency medical services' identification of potential candidates for primary healthcare: Retrospective patient record study. *Scandinavian Journal of Primary Health Care*, 33, 311–317. <https://doi.org/10.3109/02813432.2015.1114347>
- Tohira, H., Fatovich, D., Williams, T. A., Bremner, A., Arendts, G., Rogers, I. R., ... Finn, J. (2016). Which patients should be transported to the emergency department? A perpetual prehospital dilemma. *Emergency Medicine Australasia: EMA*, 28, 647–653. <https://doi.org/10.1111/1742-6723.12662>

Conflict of interest The authors declare no conflict of interest.

Funding This research received funding support from the Research Committee and the county council of Örebro.

3 CPR BY FIRST RESPONDERS IMPROVES ACID-BASE BALANCE AND PROGNOSIS IN OUT-OF-HOSPITAL NON-TRAUMATIC CARDIAC ARREST

A Hernández-Tejedor*, E Corral, R de Elías, R Suárez. *SAMUR-PC, Madrid, Spain*

10.1136/bmjopen-2019-EMS.3

Background Early basic-CPR has been shown to be effective. However, its effect on homeostasis in non-traumatic out-of-hospital cardiac arrest (OHCA) is unknown. We analyze pathophysiological and prognostic consequences of basic-CPR performed by first responders (FR) previous to EMS arrival.

Method Prospective observational cohort study including all patients treated for OHCA by an EMS from 2015 to 2017. Basic-CPR by FR and venous blood gas by Epocal (Ottawa, Canada) at the beginning of advanced-CPR were covariates.

Dependent variables included analytical values and final outcomes (ROSC and final neurological condition CPC grades I–II). Statistical analysis: Kolmogorov-Smirnov/Lilliefors test of normality, bivariate (T-test and Chi-square-test) and multivariate (logistic regression and recursive partitioning) analysis and association measures (odds ratio-OR).

Results Our EMS attended 749 OHCA. Eighty-seven cases were excluded due to lack of data on gasometry (52)/FR (35). We analyzed 662 cases (137 women, 65.1±16.1 years-old), 46.1% were shockable rhythms and 63% received basic-CPR. pH was 7.13±0.15 in CPR-by-FR-cases and 7.06±0.18 in non-CPR-by-FR-cases ($p<0.001$). PvCO₂ 69±23 vs 77±25 mmHg ($p<0.001$), base excess -6.6 ± 5.4 vs -8.6 ± 6.6 mmol/L ($p<0.001$) and lactate 6.4 ± 2.9 vs 7.1 ± 3.3 mmol/L ($p=0.008$). CPR-by-FR (OR 1.83, CI95% 1.30–2.56, $p<0.001$) and shockable-rhythm (OR 3.32, CI95% 2.37–4.65, $p<0.001$) were independently associated with higher pH. ROSC occurred in 62.8% of CPR-by-FR-cases and 54.7% of non-CPR-by-FR-cases; OR 1.40, CI95% 1.02–1.93, $p=0.039$). Recovery CPC I–II occurred in 27.1% of CPR-by-FR-cases and 19.2% of non-CPR-by-FR-cases; OR 1.57, CI95% 1.06–2.30, $p=0.022$).

Conclusion Basic-CPR by FR slows down metabolic and respiratory acidosis. This entails better outcomes. These data reinforce universal CPR training programs.

REFERENCES

- Shin J, Lim YS, Kim K, Lee HJ, Lee SJ, Jung E, et al. Initial blood pH during cardiopulmonary resuscitation in out-of-hospital cardiac arrest patients: a multicentre observational registry-based study. *Critical Care* 2017;21:322.
- Corral E, Casado MI, García-Ochoa MJ, Suárez R. Looking a 'metabolic watch'. The analytical parameters found at the beginning of the resuscitation are predictors of the neurological prognostic in the prehospital cardiac arrest. *Resuscitation* 2015;96(Suppl 1):148.

Conflict of interest None.

Funding None.

4 PRE-HOSPITAL ADMINISTRATION OF TRANEXAMIC ACID IN HEMORRHAGIC TRAUMA IS ASSOCIATED WITH HIGHER SURVIVAL RATES

¹FJ Garces Garces*, ¹E Corral Torres, ²JM Lopez-Villalta Garces, ¹EJ Simones Da Silva Pereira. ¹SAMUR-PC Ciudad De Madrid, Spain; ²HU Puerta De Hierro, Madrid, Spain

10.1136/bmjopen-2019-EMS.4

Background Studies carried out in the hospital setting have objectivized the benefit of tranexamic acid (TXA).¹ Under the hypothesis that this is a time-dependent drug, we want to analyze the effect that a very early (on-scene) administration of the drug has over the survival of the hemorrhagic patient.

Method Cases and controls, analyzing consecutively all patients susceptible of treatment, (hemorrhagic trauma, hemodynamically unstable with evidence of bleeding, whether analytical or image-based) between 2015–2018. Cases: on-scene standard treatment administered. Controls: hospital-treated. All received TXA at varying times. Epidemiological Variables: Age, gender, lesional mechanism, severity scales: Trauma and Injury Severity Score (TRISS), Revised Trauma Score (RTS), and Injury Severity Score (ISS). Exposure variable: Early TXA administration. Dependent variable: Survival after 7 days. Inferential statistical analysis: Relationship between categorical variables by Chi-square. Multi-variate binary logistic regression (MBLR) adjusted for TRISS, RTS and ISS indices. Confidence intervals $p<0.05$.

Results 171 patients: 103 cases, 68 controls. Mean age: 42.05 years (SD-20.4.) 42.1% (71) deceased before 7 days. There is

homogeneity in the severity indices among cases and controls: ISS; 47.5(SD:19.7) vs. 42.8 (21.5) $p=0.015$, RTS; 4.66(SD-2.06) vs. 4.73(SD-1.53) $p=0.808$ y TRISS; 63.02(SD-35.7) vs. 60.04(SD-31.6) $p=0.572$. After adjusting MBLR for ISS, TRISS, and RTS, survival after 7 days was higher in cases than in controls: 66.0% cases (out-of-hospital TXA administration) vs. 45.6% controls, $p=0.006$. Odds ratio: 2.32 (1.24–4.34.)

Conclusion Early (on-scene) TXA administration is intensely associated with an improvement in survival indices in hemorrhagic patients, which must lead to its procedural on-scene implementation.

REFERENCE

- Shakur H, Roberts I, Bautista R, Caballero J, Coats T, et al. with CRASH-2 trial collaborators. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial. *Lancet*. 2010; 376 (9734): 23–32. doi: 10.

Conflict of interest None.

Funding None.

5 SERIOUS CONDITIONS AMONG PATIENTS WITH NON-SPECIFIC CHIEF COMPLAINTS IN THE PRE-HOSPITAL SETTING. A RETROSPECTIVE COHORT STUDY

¹R Ivic*, ²L Kurland, ¹V Vicente, ³M Castrén, ¹K Bohm. ¹Karolinska Institutet, Department of Clinical Science and Education, Södersjukhuset, Stockholm, Sweden; ²Örebro University, Department for Medical Sciences, Örebro, Sweden; ³Helsinki University, Department of Emergency Medicine and Services, Helsinki University Hospital, Helsinki, Finland

10.1136/bmjopen-2019-EMS.5

Background Non-specific complaints (NSC) are common presentations to the emergency medical services (EMS). Patients with NSC often present with normal vital signs. Also, among patients with NSCs approximately one third have serious conditions which are not identified. Patients with NSC's are poorly studied in the pre-hospital setting. The aim of the current study was to describe the outcome serious condition in patients presenting with non-specific chief complaints to the EMS.

Method A retrospective cohort study of all patients ≥ 18 years, reported as presenting with NSC to the EMS in Stockholm County and transported to an emergency department. Patients were identified via EMS electronic patient record and followed via national patient registers. The outcome serious condition was defined in consensus. Descriptive statistics and regression analyses were performed.

Results 3780 patients were included. Median age was 77 years. Serious conditions were present in 1334 (35.3%) of the patients. Admission to in-hospital care rate was 67.6%. The in-hospital mortality rate was 135 (10.1%) (OR 6.6 CI 95% 3.5–12.5) and 30 day mortality was 269 (20.2%) (OR 4.4 CI 95% 3.3–5.7) in the group with serious conditions compared to 25 (1.0%) and 103 (4.2%), respectively, for the group with no serious conditions. Elevated triage levels by rapid emergency triage and treatment system (RETTTS) was associated with serious condition as well as mortality rates.

Conclusion One third of the patients presenting with NSC in the pre-hospital setting have an underlying serious condition which is associated with in-hospital admission and risk of death.

Conflict of interest None.

Funding None.