Injury, Int. J. Care Injured 50 (2019) 2136–2137

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury

Letter to the Editor

Evaluation of out of hospital thoracotomy for cardiac arrest after penetrating thoracic trauma; Three years after our first report

Dear Editor,

We would like to report on the outcome of out of hospital emergency thoracotomies for pulseless patients with penetrating thoracic injury as conducted by the Dutch HEMS operation. We previously published our experiences with the successful implementation of this procedure in the Dutch HEMS operation in your journal, reporting return of spontaneous circulation (ROSC) after prehospital thoracotomy in 9 of 33 patients (27%) and a first survivor [1]. We concluded that although these results were promising, the number of patients surviving and discharged with a favorable Glasgow Outcome Score (GOS) was very limited. We proposed that this was most likely due to being at the start of the learning curve, not only for the HEMS crews but also for the in hospital trauma staff in treating patients after a pre-hospital thoracotomy.

In our re-evaluation we reviewed an additional 3 years of out of hospital thoracotomies from October 2016 up to the first of August 2019. Adding the data of the last three years to the former published six years (September 2011 till August 2019) we have now performed 71 prehospital thoracotomies for pulseless patients with penetrating thoracic injury. Five of these patients survived to hospital discharge (7.0%).

When taking a closer look at these data, 33 patients went into cardiac arrest after sustaining a stab wound to the chest and had a short delay (<10 min) between cardiac arrest and prehospital thoracotomy being performed. Of these, 19 (57.6%) had return of spontaneous circulation after prehospital thoracotomy and were subsequently transported to the nearest level I trauma center. Eight of these patients (24.2%) died due to extend of their injuries or uncontrollable hemorrhage in either the emergency department or operating theater. Six patients (18.1%) survived to the intensive care unit, but eventually succumbed to post anoxic brain injury or bleeding complications. Five patients (15.5%) survived and all were discharged from the hospital in good order with a maximal GOS (Fig. 1).

Unfortunately, none of the patients who underwent prehospital thoracotomy after becoming pulseless due to a gun-shot wound to the chest survived (n = 23). Similarly, none of the patients with a stab wound to the chest and a delay between cardiac arrest and thoracotomy of more than 10 min (or unknown delay) survived (n = 15).

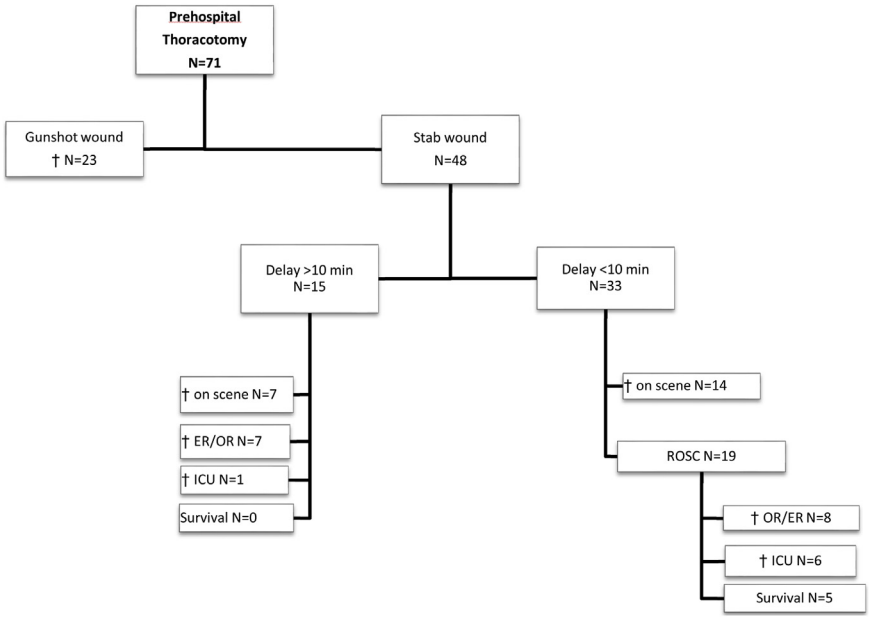

Fig. 1. flowchart Prehospital thoracotomy.

https://doi.org/10.1016/j.injury.2019.08.032

While our protocol has not changed, the ROSC and survival rates have both increased in the last three years. These improved outcomes may very well be attributed to the experience our HEMS teams and the level-1 trauma centers have acquired over the past years with this complex and severely injured patients. We hope that these data are is informative to the readers of Injury who are considering to introduce out of hospital emergency thoracotomies for pulseless patients with penetrating thoracic injury in their trauma care system.

Funding sources

None.

Declaration of Competing Interest

None.

References

[1] Van Vledder MG, Van Waes OJF, Kooij FO, Peters JH, Van Lieshout EMM, Verhofstad MHJ. Out of hospital thoracotomy for cardiac arrest after penetrating thoracic trauma. Injury 2017;48(9):1865–9.

Oscar J.F. van Waes
Anna-Marie R. Leemeyer*
Trauma Research Unit, Department of Surgery, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands

Fabian O. Kooij
Department of Anesthesiology & Lifeliner 1/HEMS, Amsterdam UMC, Amsterdam, the Netherlands

Nico Hoogerwerf
Department of Anesthesiology & HEMS, Radboud University Medical Center, Nijmegen, the Netherlands

Mark G. van Vledder
Trauma Research Unit, Department of Surgery, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands

* Corresponding author at: Erasmus MC, University Medical Center Rotterdam, Trauma Research Unit Department of Surgery, Room H-822k, P.O. Box 2040, 3000, CA, Rotterdam, the Netherlands.
E-mail address: a.leemeyer@erasmusmc.nl (A. Leemeyer).