Honore et al. Critical Care (2020) 24:64
https://doi.org/10.1186/s13054-020-2803-0

Critical Care

LETTER Open Access

Thrombolytic therapy during resuscitation for pulmonary embolism-related out-of-hospital cardiac arrest: perhaps not the ideal solution for everyone

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Javaudin et al. [1] recommended that for cases of out-of-hospital cardiac arrest (OHCA) for which a cause is not obvious, pulmonary embolism (PE) should be suspected if the initial rhythm is nonshockable and there is a history of thromboembolism (TE). In accordance with the guidelines of the American Heart Association, these patients could be treated with systemic thrombolysis (ST) during resuscitation (low level of evidence) [1]. We would like to add some comments. First, recent studies have shown that ultrasound-facilitated catheter fibrinolysis relieves right ventricular pressure overload with a lower risk of major bleeding and intracranial hemorrhage than historical rates with ST [2]. However, further research is required to determine the optimal application of this technique in the setting of acute PE [2]. Second, the insertion of an emergency veno-arterial extracorporeal membrane oxygenation (VA-ECMO) catheter should be considered before starting ST. VA-ECMO can be a lifesaving therapeutic consideration, either as an adjunct to definitive management strategies (surgical/catheter embolectomy, thrombolysis) or on its own [3]. According to a recent systematic review, VA-ECMO for selected patients with massive PE is associated with good outcome [3].

Third, after failure of thrombolysis, surgical embolectomy or catheter embolectomy should be considered in selected centers [3]. Fourth, published cases of thrombolysis for massive PE during pregnancy and the postpartum period suggest acceptable maternal and fetal survival even with CA [4]. In the postpartum period, given the high risk of major bleeding with thrombolysis, other therapeutic options (catheter or surgical thrombectomy, VA-ECMO) should be considered if available [4]. Lastly, chronic thromboembolic pulmonary hypertension (CTEPH) is a pulmonary vascular disease caused by chronic obstruction of major pulmonary arteries and often occurs after an initial PE or TE [5]. The authors note the importance of a past history of PE or TE as a risk factor and should therefore consider CTEPH as well. CTEPH can be cured by pulmonary endarterectomy (PEA), a challenging procedure for which patient selection and perioperative management are complex, requiring significant experience [5]. We had a 45-year-old patient with CTEPH who, after failed thrombolysis, was transferred to another center for PEA and achieved a full recovery [5]. Thrombolysis may not be the cure for everyone. A clear step by step approach should be considered in case of failed thrombolysis.

Abbreviations

OHCA: Out-of-hospital cardiac arrest; PE: Pulmonary embolism; CA: Cardiac arrest; TE: Thromboembolism; ST: Systemic thrombolysis; VA-ECMO: Veno-arterial extracorporeal membrane oxygenation; CTEPH: Chronic thromboembolic pulmonary hypertension; PEA: Pulmonary endarterectomy

Acknowledgements

We would like to thank Dr. Melissa Jackson for critical review of the manuscript.

Authors' contributions

PMH, SR, and DDB designed the paper. All authors participated in drafting the manuscript. All authors have read and approved the final version.

Funding

None.

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This comment refers to the article available at https://doi.org/10.1186/s13054-019-2672-6
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Availability of data and materials
Not applicable.

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

Received: 10 February 2020 Accepted: 19 February 2020
Published online: 24 February 2020

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