Reviewer's report

Title: Hypoxia and hypotension in patients intubated by physician staffed helicopter emergency medical services - a prospective observational multi-centre study

Version: 0 Date: 24 Feb 2017

Reviewer: Joost Peters

Reviewer's report:

Dear Editor,

First of all I like to thank you for the opportunity to review this article on a very important aspect of prehospital care. I would like to congratulate the author and research group for this huge achievement; being able to combine data from 21 (!) HEMS operations all over the world.

A suggestion to add "physician staffed HEMS" to the keywords.

And of course some questions:

- Why the comparison between the heterogeneous patients groups trauma and non-trauma? Is it just to compare two groups? This needs more explanation in the introduction session. An alternative option could be describing the whole group of pHEMS prehospital TI, with two (or more) subgroups.

- Trauma patients often have more difficult airway access. Possible C-spine injury, blood in orophanrynx etc etc. This may influence the outcomes and needs explanation.

- No data is presented regarding associated upper, lower airway and thoracic trauma in these (trauma) patient groups. This makes it difficult to interpret the outcomes and comparison between the groups.
- Hypoxemia and outcome is also associated with the time it takes to gain a secured airway. No data is presented regarding the number of attempts to secure the airway. No emergency surgical airways are presented. According to the available literature approximately 9 ESA's could be expected in this group.[1] This needs clarification.

- In the figure the patients with a "failed airway" eg BVM and SAD are taken out of further analysis. I think this is not the correct way to treat this data. If all these patients (with probable higher incidence of hypoxemia) are for instance trauma patients this possibly influences the outcome.

- Data collection: the term survival is somewhat misleading as data is only available till hospital presentation. The term "short-term survival" would be more appropriate. When survival is taken till hospital arrival, it is strange that in 15 patients the HEMS physicians did not know/noted if the patients was alive at presentation (figure). If the quality of data accusation can't make the difference between dead or alive on presentation one could question the reliably of all presented results.

- Where the times to measure hypoxia and hypotension standardized? Or were the data collected randomly prior and after TI? This needs explanation. Where these data collected objectively or remembered by the HEMS staff and noted afterwards, possibly adding a recollection bias?

- The primary aim is to describe incidence of hypoxia and hypotension. Both groups receive possibly non-comparable treatment with different treatment regimes/medication. The medication and protocol in all 21 HEMS operations are not standardized. A possible variation in medication (with more hypotensive side-effect) could be a cofounder. This needs attention in the discussion section. The same could be the case for the amount of fluids that are administered prior or after intubation. Maybe local protocols limit the fluid administration in trauma because of "permissive hypotension". In non trauma patients possibly the patients received an amount or crystalloids as "preloading" for the TI as part of local protocols.

- The difference in age in both groups could be a explanation for the difference found. This needs more attention in the discussion.
- Survival: I think the conclusion that TI is safe and "handled adequately" cannot be drawn from this article. You can say that the majority of patients are presented at the hospital alive. Please adjust this in the conclusion or use short term survival here.


Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

Quality of written English
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