Reviewer’s report

Title: The predictive value of diaphragm ultrasound for weaning outcomes in critically ill children

Version: 0 Date: 01 Sep 2019

Reviewer: Chrissie Astell

Reviewer's report:

The present study by Xue and colleagues finds diaphragm thickening fraction and diaphragm excursion measured by ultrasound significantly predict weaning outcome in critically ill children. In comparison, the authors suggest that maximum inspiratory pressure is a poor predictor of weaning outcome in children.

This is an interesting study, however I have some concerns:

Could the authors consider patient age/size when comparing PImax of weaning successes and failures. Patients ranged from 10 months to 13 years old in this study, and age and BMI are known predictors of respiratory muscle strength in healthy children. There was a trend towards lower maximum inspiratory pressure in weaning failures, compared to weaning successes (p = 0.096), and PImax may differ significantly when taking patient age/size into account.

I suggest the authors consider patient age/size when analysing other diaphragmatic parameters. Diaphragm thickness at end inspiration and diaphragm thickness at end expiration do not differ significantly between the weaning success and failure groups when patient age/size isn't taken into consideration. However, as the authors pointed out, diaphragm thickness changes with age in children.

General comment:

The manuscript would benefit from further editing to improve the overall clarity of writing. For example:

- the first paragraph of the introduction is a page long and introduces multiple ideas. Consider separating ideas into paragraphs.

- Pg 2 line 9 "Multiple adult studies have shown that diaphragmatic ultrasound can better predict the outcome of weaning, which has great value of guiding weaning in patients with MV".

Grammatical issues.

- Pg 7 line 1 "The measurement of PImax was occluding the airway at end expiration through a unidirectional valve, and maintained for approximately 10 breaths or 20 s". This is unclear.
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?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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