Reviewer's report

Title: Increased respiratory rate and decreased thoracic movement are simple methods to assess respiratory insufficiency in amyotrophic lateral sclerosis

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Reviewer: Mamede de Carvalho

Reviewer's report:

The authors investigated a small number of ALS patients in order to assess if some clinical features, as respiratory movement frequency and thoracic expansion could have prognostic value.

The major problem of this paper is that they did not apply the correct methodology to obtain the predictive value for any of the above clinical observations. In particular, they would need to define a cut-off value as defined by observing a larger population of ALS patients and/or controls, and then calculate the positive and predictive values of the above mentioned clinical signs. Observing that a group of patients who with increased chance of requiring NIV in the following interval of 6 months had higher baseline respiratory frequency or decreased thoracic movement does not mean predictive value.

Another major problem is that we do not know how “breath per minute” was calculated. Was it calculated in one minute? in a longer time? was the patient resting? for how long? in what position? etc Regarding the thoracic expansion, I have the same problems as described for “breath per minute”. In addition, how was the patient size and gender considered in calculating thoracic expansion?

I see 4 more major problems

It is a retrospective study.

The inclusion and exclusion criteria are not clear. Did the authors include patients with other medical conditions, such heart and lung disorders?

What guidelines did the authors follow to define the NIV need? Certainly the European guidelines recently published are not limited to the few points mentioned by the authors in their manuscript.

I do not understand why other very important clinical features were not considered by the authors, as the use of accessory muscles to help ventilation in patients resting, or even the presence of paradoxical ventilation.

Many points of this manuscript are not clear to me. Why nocturnal oximetry and pCO2 determination required hospitalization? Facial weakness is not common in the patients with limb-onset disease (the majority). Why other scales of dyspnea were not used? Not sure how from the total number of 77 patients only 49 were analyzed. The reduced thoracic compliance in ALS is a point not clear to me. Both groups had similar Dyspnea on VAS and FVC at entry, but they strongly differ regarding the best NIV time and this intervention happened only 2 months
after assessment in group 1; how the authors explain this?

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests