Reviewer's report

Title: Predictors of expiratory flow limitation measured by forced oscillation technique in COPD

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Reviewer: Claudio Tantucci

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General comments
This is a very good work performed by expert Authors in FOT-based analysis of the respiratory system (essentially lung) mechanics.

In this study they tried to sort out the determinants of tidal expiratory flow limitation (EFL), as detected by the difference within breath of reactance at low frequency (#X,5), in a quite large cohort of stable COPD patients under chronic treatment.

The extent of lung emphysema (as measured by the HRCT density analysis) and the severity of airflow obstruction (as documented by the whole breath R,5 value), mainly in the peripheral airways, were found as the most relevant, independent predictors of risk or possibility to have EFL in COPD. Pulmonary hyperinflation (as assessed by the FRC % predicted) seems to me linked to EFL as an effect rather than a cause.

The main limit of this study could be the choice of the median value of #X,5 as an index of high or low probability of having EFL, instead of a threshold value of #X,5 as a cut-off of presence or absence of EFL.

Perhaps many COPD patients with a high index of EFL (let say those with #X,5 between 0.55 and 2.5 cmH2O/l/s) might be non flow limited during tidal breathing.

This can explain some strange result. For instance it is highly improbable to have an IC 100% predicted in the presence of EFL (see Table 2).

In any case this study is well performed, statistics are clear, Tables and Figures are adequate and results are very interesting. The English is good.

Minor comments
I will begin the manuscript saying:

“Tidal expiratory flow limitation (EFL) occurs when an increase in transpulmonary pressure causes no increase in resting expiratory flow. This phenomenon is common in patients with severe COPD and is a major determinant of dynamic hyperinflation and exercise limitation (1,2). Dellacà et al…….. 

In fact, overlapping of expiratory flow-volume curves between tidal breathing and forced expiration may suggest tidal EFL, but it does not prove it at all.
Which is the HU threshold chosen for LAA?

Tables need to have complete abbreviations.

Few mistakes to correct:

Abstract, line 31: pulmonary function instead of pulmonary functions.
Background, line 71: idem.
Discussion, line 165: instead of R,rs I will put R5, R20, R5-R20; line 174: idem
Discussion, line 165: instead of #X,5 it should be written X,5.#line 166: instead of X,5 it should be written #X,5.
Conclusions, line 263: The risk of EFL… instead of the degree of EFL.....

Minor essential revision is required

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests