Author's response to reviews

Title: Swallowing transit times and valleculae residue in stable chronic obstructive pulmonary disease

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We thank BMC Pulmonary Medicine for the careful and detailed review of our manuscript entitled “SWALLOWING TRANSIT TIMES AND VALLECULAE RESIDUE IN STABLE CHRONIC OBSTRUCTIVE PULMONARY DISEASE”.

Based on the comments made by the reviewers and the editor, we are now submitting the revised version for your appreciation. All of the modifications are marked in red throughout the text and are listed below:

1. we included a hypothesis at the end of the introduction;

2. the sentence “swallowing and respiration are reciprocal functions” was revised and changed to “swallowing and respiration are coordinated functions”;

3. information about the smoking habits of COPD patients and controls was included in the Methods section;

4. we included the information about body mass index because this measurement has been shown in the literature to be an independent indicator of poor prognosis in patients with COPD. Besides that, as described in the Background section, COPD patients tend to show an overall poor nutritional status due to malnutrition. Dysphagia is usually a precipitating factor for malnutrition. Since we were investigating swallowing parameters of COPD
patients, we decided to investigate if BMI correlated to any of our swallowing measurements.

5. information about the commercial barium preparation and concentration was included in the methods section;

6. information about the consistency of the fruit puree and brand was also included;

7. we did not measure oral transit time in our paper, this information was removed from the Methods section;

8. as explained in our Discussion section, one of the limitations of our study is that the method used to quantify pharyngeal residue is applied only to the valleculae, with no corresponding measurement for the piriform sinuses. As highlighted in our text, this point should be considered in future studies, using a different methodology for measuring bolus residue;

9. In order to avoid posture interference during VFSS, all participants remained seated, at an angle of 90o, with their heads positioned horizontally according to the Frankfort plane (i.e. head parallel to ground, considering the position of the inferior margin of the left orbit and the upper margin of each external auditory meatus), during the entire exam. This information was included in the Methods section;

10. all measurements (height and width), in millimeters, were performed on the actual computer screen using a digital caliper. In order to guarantee reliability of the performed measurements, all images were analyzed on the same computer (notebook Dell Inspiron 1440) with the zoom tool at 100%. This information is in the methods section. No other reference of magnification was used;

11. formula for calculation of the area of valleculae and area of residues (height x width) are described in the Methods section;

12. we corrected the typing error on page 14 – “TBM” was substituted by “TBC”;  

13. we agree with the Editor that age is not an explanation for the difference between patients and controls because groups were matched for age. However, we understand that age had a strong influence in our results regarding valleculae residue. This measurement did not differ between the groups, as we believed it would. In our study, the mean age of the participants was around 59 years. According to the WHO, individuals with 60+ years are referred to as an older population. Physiological changes, related to swallowing alterations in elderlies, have already been described in the specific literature: decrease of muscle mass and connective tissue elasticity result in a decrease of muscle strength and mobility. These changes may negatively affect the effectiveness and efficiency of swallowing and airway protection. In general, there is a subtle slowdown of the swallowing process with age along with other alterations related to the oral preparatory phase, number of swallows per bolus, and the presence of food residue along the digestive tract. This is the reason why we believe valleculae
residue was present in our healthy controls and did not differentiate our groups. Future studies should consider other age groups. We clarified this information in our text;

14. references 7 and 8 were revised;

15. the time unit of Table 3 was included in the text;

16. results about between-group differences regarding PTT / TBC and the different volumes of test foods were given consideration in the Discussion section. References were included for support;

17. we do not believe that there is a need to comment on the inter-individual variations observed across our results. Since we are discussing a physiological function that is highly dependent on anatomical structures (different shapes, sizes and volumes), this is something to be expected. We described in our text that our data did not present a homogenous distribution and for this reason adopted non-parametrical statistical tests.

We were very careful to answer all of the comments made by the reviewers and editor. Thank you for the opportunity of revising our paper

Prof. Claudia Regina Furquim de Andrade (on behalf of all