Reviewer 1 v.1

Comments to the Author

The authors present a comprehensive review on the topic of Bronchopulmonary dysplasia – what are its links to COPD? It represents a narrative review. There is no particular comment made on the choice of citations. Obviously, they have prioritized the most recent citations. The review is very well written, and gives a good overview on the topic by taking into consideration various important aspects.

The following comments are merely suggestions, to put more focus on the link between the two diseases BPD and COPD.

MAJOR COMMENTS

1. The review does not mention the characteristics of COPD such as airflow limitation and the contributing conditions of emphysema and chronic bronchitis. By pointing out the similarities of the pathophysiologic and histopathologic picture of the two diseases, it makes it easier to understand the contribution of BPD to the development of COPD and possible common pathways.

2. In the section of respiratory health trajectories, the authors could explain normal lung growth a bit more detailed. It would help to visualize possible changes of lung function trajectories after premature birth and additional influencing factors, which might lead to a critical threshold of lung disease with age (Stocks J et al, Lancet Respir Med 2013; 1: 728-42. Burrows B et al, Am Rev Respir Dis 1977; 115: 751-60.). The concept of “fetal programming” could be mentioned (Barker D et al, BMJ 1991 303: 671-675).

3. At the end of the section pathophysiology of BPD, I would expect a short introduction of the following sections in order to realize that they are part of the pathophysiology section. Otherwise, the pathophysiology section seems much too brief.

Disruption of angiogenesis and subsequently of pulmonary vasculature as part of the pathophysiology of BPD could be stressed more which is directly linked to disrupted lung development.

What is known about the influence of preterm birth on airway microbiome and of links to COPD?

4. Genetic factors in BPD and COPD. The authors could think about giving one concrete example of how alteration in early lung growth regulating pathway influences COPD susceptibility (e.g.: Van Dume YM et al. Eur Respir J 2010;36:89-95). This gives a better idea of possible linking mechanism from a genetic point of view.

5. Link between BPD and COPD. Table 1 nicely outlines the influencing factors according to developmental stages on adult lung function. It could be even more informative if the authors fill in the blanks either by estimating the strength of evidence for the respective factor or by briefly mentioning how the respective factor influences the lung, and refer to literature.

6. Conclusions. The authors should highlight the remaining gaps of knowledge more clearly, its implications for future research and possible strategies for therapeutic advances.

The so-called “critical period” of postnatal lung development represents at the same time a window of opportunity for new therapies that might enhance the process of ongoing lung-development and late alveolarization. Better understanding of the pathogenesis and the links of both diseases, will allow to develop new therapeutic advances. I miss a summary of existing, experimental therapies (e.g. stem cell transplantation) and an outlook on new therapeutic strategies (Naeem A et al, Eur Med J, 2019;4:20-29).

MINOR COMMENTS

7. Figure 1: Please add z-score for lung function values, instead of % predicted.

8. It would be illustrative to add another figure next to figure 1 with the lung function and chest CT from an adult COPD patient. This would show the similarities of functional and structural lung changes in both disease entities, highlighting their possible common pathways.