Author’s response to reviews

Title: Prevalence and characteristics of COPD among pneumoconiosis patients at an occupational disease prevention institute: A cross-sectional study

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Response to Reviewer Comments

Responses to Reviewers

General:

1. Reviewer reports:

Jens Braunlich (Reviewer 1): Major comments:

- The background section should present current studies and relevant literature. The inclusion in the discussion section is too late.

Response:

In the background, we add some study about dust or gas/fume exposure and COPD and the relevant study about pneumoconiosis and severity of AECOPD.

- background 31: What is the difference between longstanding and long-time asthma?
Response: There is no difference between longstanding and long-time asthma in meaning. We deleted the “long-time asthma”.

- Why you include patient with only 1 year underground work

Response: In our manuscript, we noted that the included pneumoconiosis patients were workers who worked underground for at least 1 year. Before we design this investigation, we know that most of the pneumoconiosis patients were exposed for a rather long time, and our result show that the mean exposure time was 17.70 years (range 1-38 years). In addition, we take 1 full year (12 month) as exposure for 1 year in the data collection. So we included patients with at least 1 year exposure with underground work and this didn’t have much effect on the final results.

- data collection: How was the questionnaire validated?

Response: The COPD specific questionnaire of CAT and CCQ are well-recognized scale with good reliability and validity in COPD patients. We cite the related reviews in the manuscript. And the severity score questionnaire of five respiratory symptoms are selected from the CAT and made with small modifications. Below is the cited review of the validated information:


- You recruited patients from 2015-2016. Why do you performed diagnosis to the 2017 GOLD guidelines?

Response: Sorry for the puzzling description, we recruited the patients from December 1, 2015, to December 1, 2016, and we diagnosed COPD and made the model of symptom/risk of COPD according to the file of “GLOBAL STRATEGY FOR THE DIAGNOSIS, MANAGEMENT, AND PREVENTION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE UPDATED 2015”. We record the symptoms scale score (CAT), breathlessness scale score (mMRC), airflow limitation grade and exacerbation history information when we recruit the subjects. We checked that the GOLD 2017 and GOLD 2015 guideline didn’t differ in the diagnosis of COPD. For the convenience of the citation, we cite the file from GOLD website (http://goldcopd.org/) which is a latest guideline (GOLD 2017) at this moment. We changed the description accordingly in the manuscript and we changed the citation as below:


Minor comments:
Response: Thanks for the comment, we have added the page numbers in the manuscripts.

Response: Thanks for the comment, we have changed the expression as “COPD is characterized by partial reversible airflow limitation”.

Grzegorz Marek Brozek, Ph.D., M.D. (Reviewer 2): Prevalence and characteristics of COPD among pneumoconiosis patients at an occupational disease prevention institute: A cross-sectional study

The manuscript by Peng et al. "Prevalence and characteristics of COPD among pneumoconiosis patients at an occupational disease prevention institute: A cross-sectional study" focus on coexistence of COPD with pneumoconiosis. In brief the authors conclude that "Pneumoconiosis patients are at a high risk of COPD, pneumoconiosis patients with COPD may suffer more severe respiratory symptoms like wheeze and dyspnea than patients without COPD. The high category of pneumoconiosis, old age, wheeze symptom, and low BMI are associated with an increased risk of this combination." (what combination? Wheeze with "wheeze and dyspnea"). As independent determinants of COPD were identified: pneumoconiosis category, wheeze, reduction in BMI and age.

In general the message from the research as well as the whole analysis is for me unclear and unconvincing. Compared groups pneumoconiosis vs. pneumoconiosis+COPD differed statistically significant in case of age, pneumoconiosis category, exposure time, engagement in air drills, BMI, airflow limitation, diffusion, symptoms severity score. When is already know that: age and smoking and are independent, undisputed risk factors of COPD; age and exposure time are risk factors for pneumoconiosis; and airflow limitations and respiratory symptoms are manifestations of pneumoconiosis and COPD, the analysis should be done as stratified or any other way controlled for potential confounders. In such case as invariable as well as multivariable analysis results may be misleading. I'm afraid that age and smoking differences are responsible for described coexistence of pneumoconiosis and COPD. Even if the results are unbiased in the discussion section I found arguments rather against as explaining the phenomenon.

Response: Thanks for the comment and suggestions proposed by the reviewers. We changed the expression of “an increased risk of this combination” to “an increased risk of developing COPD in pneumoconiosis” and “wheeze and dyspnea” to “wheeze or dyspnea”.

For simplicity, and to emphasize the difference between pneumoconiosis with and without COPD, we divide the patients into pneumoconiosis with and without COPD, instead of pneumoconiosis without COPD and with COPD Group A, B, C, D.
As smoking is recognized as a main factor for COPD, we stratified the patients into four different types: heavy (≥20 pack-years), moderate (≥10, < 19 pack-years), mild (< 10 pack-years) and never cigarette smokers—for better analysis of variance.

Even though the relative small population of patients without smoking history and a healthy smoker effect biasing our results, we did the multiple logistic regression analysis for the pneumoconiosis patients without smoking history. However, neither smoking index or type of smoking history was found for the risk of COPD in the whole population or pneumoconiosis patients with smoking history. We make the both the univariate and multivariate logistic regression analysis of patients in the whole population and in the patients with and without smoking history. We found that advanced pneumoconiosis category, old age and the presence of wheeze symptom were associated with an increased risk of COPD in pneumoconiosis.

We added Table 1, Table 3, Table 4, Table 5, Table 6 and we also reorganized the result parts of Table 2. In order to make the discussion more logically and more closely with our text than the previous one, we have made some changes. These modifications can be seen in the manuscript.

Minor comments:

1. The authors formulate difficult to understand phrases. Like referred to above line from the summary about "the combination" or into the Discussion: "Longitudinal studies have shown that exposure to coal dust has a rapidly decreasing effect on FEV1, independent of cigarette smoking [22], and cigarette consumption had no independent effects on lung function [23]." Do they really claim that cigarette consumption has no independent effects on lung function? Really?

Response: Sorry for the confusion, we should summary these studies in separate sentences. The revised expression is: “Longitudinal studies have shown that exposure to coal dust has a rapidly decreasing effect on FEV1, independent of cigarette smoking. In another study, the progressive massive fibrosis grade and emphysema index at CT were found to be the best independent determinants of FEV1,FEV1/FVC, and TLC in silicosis. Neither duration of silica exposure nor cigarette consumption had an independent influence on the lung function or clinical parameters, with the exception that cigarette consumption affected DLCO.”

2. If study was performed between December 1st, 2015 to December 1st, 2016 how possible that "The diagnosis of COPD was performed according to the GOLD 2017 guideline"

Response: Sorry for the puzzling description, we recruited the patients from December 1, 2015, to December 1, 2016, and we diagnosed COPD and made the model of symptom/risk of COPD according to the file of “GLOBAL STRATEGY FOR THE DIAGNOSIS,MANAGEMENT, AND PREVENTION OFCHRONIC OBSTRUCTIVE PULMONARY DISEASE UPDATED 2015”. We record the symptoms scale score (CAT), breathlessness scale score (mMRC), airflow limitation grade and exacerbation history information when we recruit the subjects. We checked that the GOLD 2017 and GOLD 2015 guideline didn’t differ in the diagnosis of COPD. For the convenience of the citation, we cite the file from GOLD website (http://goldcopd.org/) which is a
latest guideline (GOLD 2017) at this moment. We changed the description accordingly in the manuscript and we changed the citation as below:


3. What was alpha level?

Response: The p value less than 0.05 was determined as significant difference in the statistics.

4. Page 10/19 it is not a cohort!

Response: Thanks for correcting, we changed the expression of “cohort” as “study”.

5. In light of the presented results I failed to substantiate the conclusion claim "a routine assessment of lung function and detailed respiratory symptoms evaluation is necessary for timely and adequate clinical management. The identification of these different risk factors advances a new perspective for more effective screening and prevention of COPD in pneumoconiosis"

Response: Thanks for the comment. We changed the expression as “A routine assessment of lung function is necessary for timely and adequate clinical management.”