Reviewer's report

Title: Matrix Metalloproteinase-9 Mediated Inflammation Persists up to 6 Months after Smoking Cessation

Version: 1 Date: 12 November 2009

Reviewer: Louise E Donnelly

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BMC Pulmonary Medicine
Louhelainen et al., Matrix metalloproteinase-9 mediated inflammation persists up to six months after smoking cessation.

General comments
This study examines changes in the inflammatory profile of induced sputum during smoking cessation for up to 6 months. The manuscript reports that smoking increases MMP and TIMP-1 levels in induced sputum but upon smoking cessation, MMP-9 remains elevated at 6 months whilst the other MMP and TIMP return to control levels. The authors then imply that prolongation of MMP-9 expression may contribute to lung damage in COPD. Whilst this is a nicely designed study the presentation of data is somewhat confusing and would benefit from revision. In addition, there are some methodological concerns that also should be addressed below.

Major compulsory revisions
1. Although expression of MMP is very important, the activity of these enzymes is critical to understanding their role in disease pathology. Do the ELISA assays used in this study measure both active and latent forms of the enzymes? If so, this should be discussed and where possible activity assays performed. In addition, do these assays measure TIMP associated MMP? These are important points that should be addressed.

2. A table of differential and total cell counts for the sputum samples should be included. This is important particularly for the baseline data for the three subgroups.

3. Fig 1 might be better presented if data were displayed as dot plots. This would allow the reader to see the ‘n’ in each of the groups.

4. The data presented for MMP-9 would indicate that after 3 months smoking cessation, expression of this enzyme increases but then decreases at 6 months. Is this correct? If possible, a separate analysis for each of the nine subjects that quit smoking for 6 months should be performed.

5. The discussion should contain some reference to activity or otherwise of MMP and what is actually being measured in this study.
Minor essential revisions

1. MMP-7 (matrilysin) may act to breakdown elastin but is not considered an elastase as described in the introduction (page 4, line 7) and is not as highly expressed as other MMP in human disease. This sentence should be amended.

2. Concentration of DTT used to process sputum and the final concentration of DTT should be included in the methods section (page 6, line 3).

3. Centrifugation should be described in terms of ‘g’ not rpm (page 6, line 6)

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