Reviewer’s report

Title: Risk of fracture among patients with polymyalgia rheumatica and giant cell arteritis: a population-based study

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Reviewer: Christoph Fiehn

Reviewer's report:

The authors report a large retrospective cohort study which analyses the rate of fractures in patients with PMR and GCA, and they show that the prescription of bisphosphonates in the UK seems to be insufficient.

As the existing data are limited, this is an important contribution. Moreover, the issue of glucocorticoid (GC) side effects is currently in the focus, as with tocilizumab there is a new and effective, although expensive, drug for GCA which is in clinical trials for PMR as well. Osteoporotic fractures are a main side effect of GC-treatment and it has been shown in the GiActa-Trial that the period of prednisone treatment in GCA can be safely shortened to 6 months by tocilizumab. Therefore, data which would help to estimate the benefit of the reduction of GC treatment and therefore to define the future role of tocilizumab are very much needed.

However, the manuscript presented here does not sufficiently give answers to these questions. In the background chapter of the manuscript they even write that "Glucocorticoids remain the only proven treatment for GCA and PMR", which is not true any more.

Major:

1. The authors should discuss which - by limiting the prednisone treatment in GCA (and as well PMR) to 6 months by adding tocilizumab - benefit in terms of reduction of fracture risk can be expected.

Moreover, some of the results are really difficult to understand and should be clarified.

2. It was shown that a higher cumulative dose of GC is associated to a lower risk of fracture. How can this be explained? It is not discussed sufficiently! It might be that fracture risk is associated to the maximum daily dose of GC, rather than the length of the period the GC are given.

3. When PMR have longer periods of GC treatment and higher cumulative doses, why then the risk of fracture is identically between both diseases? Is it possible that the data have a bias, which the authors have not exposed yet?
4. When the risk is the highest in the first year of treatment, than the cumulative dose until the time point of fracture, rather than the one until last follow up, would be more relevant.

5. Further on, it is not clear what the "index date" means. It seems to be the first time the patient is registered, but does it identical to the time of diagnosis?

6. In table 4 it is difficult to understand why the HR is below 1 in all GC dose groups, although the HR of the whole population is increased to 1.63 and 1.67 for PMR and GCR (Table 2). Please explain.

Minor: In the tables the term "Exposed" and "Non-exposed" are misleading. The terms "present" and "non-present" would be easier to understand.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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