Reviewer's report

Title: The association between C-reactive protein and the likelihood of progression to joint replacement in people with rheumatoid arthritis

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Reviewer: Eero A Belt

Reviewer's report:

Pool CD, Conway P, Reynolds A, Currie CJ:
The association between C-reactive protein and the likelihood of progression to joint replacement in people with rheumatoid arthritis

1. “Question posed by authors”:
The posed question is important.
Authors document that replacement surgery is excluded from economic models evaluating the cost-effectiveness of DMARS due to deficient data. CRP level is proposed to be a marker of the effectiveness for the use of DMARDS so that those cases with CRP levels over 10mg/L should be treated further, even more effectively, to avoid replacement surgery. Thus the usefulness of DMARDs despite their expenses could be shown.

2. “Are the methods appropriate”
Data collection and statistical work is relatively sound and good, but some comments should be added. How have the authors split the CRP values into acute/subacute categories.? The values are different from values used in Figure1, where they present the CRP values: low < 8.03, intermediate 8.03 – 18.32 and high > 18.3 mg/L. The methods used should be the same in the methods and figures. Moreover, it is of interest to know how the authors defined the limits (cutting points) for different categories, because by choosing these suitably the expected results could be attained.

3. “Are the data sound”
The data are on a relatively sound basis. However, it would be even better if the count of swollen and tender joints were presented during follow-up. This is a register study so that it is difficult to get these results. The use of sedimentation rate instead of CRP would be even better, because CRP levels change more promptly. CRP is an indirect marker of tissue destruction, and authors might refer a paper which showed that increased type I collagen degradation is associated with a need for total joint replacement surgery in rheumatoid arthritis (Ann Rheum Dis. 1996;55:147).

4. “Relevant standards for reporting”
Good enough
5. “Are discussion and conclusions well balanced and supported by the data”
   Data support discussion and conclusions

6. “Are limitations of the work clearly stated”
   These should be better presented. It is important to discuss that many other
   background factors could influence the CRP levels. Some patients may present
   normal CRP levels despite swollen joints. It should be discussed that there are
   no such clinical background data available. Moreover CRP levels could have
   been normal almost a years and some inflammation may have caused high
   values before control laboratory. This does not necessarily mean that the patient
   needs more medication.

7. “Acknowledgement any work”
   No.

8. “Title and abstract”
   Sufficiently good

9. “Writing”
   Good.

Comments:
Minor essential revisions:
- how the authors have got different CRP categories? Methods and figures
  should present the same data and categories.
- limitations of the use of CRP levels as an indicator for the risk of joint
  replacement. Other factors may be on the background. Deficient clinical data e.g.
  the count of tender and swollen joints
- Surgery itself increases CRP values, this should be shortly discussed
- It should be discussed that the median time from RA diagnosis to joint
  replacement is only 4 years in contrast to literature, where much longer periods
  are presented (e..g. Wolfe and Zwillich Arthritis Rheum 1998 and Palm et al Clin
  Exp Rheumatol 2002;20:392-4)
- It should be discussed if these patients have already previously had
  replacement surgery. How do CRP values behave when one individual joint is
  replaced? May be there is no influence at all on the CRP levels.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

'I declare that I have no competing interests'