Reviewer's report

**Title:** Relationship between time-integrated disease activity estimated by DAS28-CRP and radiographic progression of anatomical damage in patients with early rheumatoid arthritis

**Version:** 2 Date: 10 March 2011

**Reviewer:** Carl J Lombard

**Reviewer's report:**

This is a cohort study of 59 patients of which 11 dropped out over the course of the 3 years of follow-up. The analysis of the 48 remaining is therefore a per protocol analysis. These results are therefore representative of participants with an ideal follow-up schedule and does not provide evidence on patients with an irregular follow-up.

The authors report percentages such as the 54.2% (26/48) of RA patients with substantial radiographic progression. It is the norm to report some confidence interval for these important point estimates to reflect the uncertainty and precision linked to a sample size of 48. (54.2% 95%CI: 39.2% to 68.6%) This is relevant for both categorical and continuous variables.

The calculation of the SSD using the Bland and Altman procedure is not clear. It is not clear which pair of readings were used to calculate the measurement error. Was it the baseline values or the end values? The measurement error can actually be estimated by using the repeated readings at baseline and end of the two readers. What was the estimated measurement error of SHS in the study?

For investigating the relationship between SHS outcome and inflammatory burden with adjustment for confounders and other covariates a regression model using the SHS score at 3 years will be a better option given the small sample size of 48.

The scatterplot of SHS at 3 years versus AUC Das28 will be very informative. The coefficients reported from the model will have a natural interpretation in terms of the units of SHS. The baseline value of SHS should be used as a covariate to adjust for individual difference at baseline.

Apart from the recommendation about a ordinary regression model a logistic regression model is not appropriate for a outcome with a prevalence of 54%. The odds ratio over estimates the risk. A model estimating relative risk will be better.

Not sure why the SHS outcome at the end is not reported by laboratory and clinical strata: both the absolute and categorical measure.
**Level of interest:** An article whose findings are important to those with closely related research interests

**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'