Reviewer's report

Title: Disease-specific survival for limited-stage small-cell lung cancer affected by statistical method of assessment

Version: 1 Date: 19 June 2006

Reviewer: Joanna Moschandreas

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General
The study, which aims to compare standard survival analysis techniques with the Boag log-normal and log-normal models, is of potential importance. It was found that disease-specific survival is influenced by the method of statistical assessment. One major limitation of the study, however, is that the methods used to compare estimated survival experience are based on survival at specific time points, rather than over the entire time period. Another limitation is that no details are given on the assessment of model fit and variability of estimated parameters.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1) Introduction. It is stated that the Boag log-normal model has been previously validated for the estimation of survival in patients with limited-stage small-cell lung cancer. The authors should state what the model was validated against and also clarify whether the same patients were used in the validation (also 244 patients).

2) Methods. The properties of Kaplan-Meier curves and the Cox PH model are well known. A brief description needs to be provided of the other two modelling methods, however, particularly of the Boag log-normal model.

3) Methods. Why was the patient who had unknown status at the last follow-up excluded from the analysis, instead of being censored as ‘lost-to-follow up’ at the last known time alive?

4) The 4 group categorization of patients (A-D) was based on the factors found to be statistically significant for both models. This categorization procedure does not seem to be justified: why were the particular 4 groups created?

5) There seems to be a typing error for the surgery variable in Table 1: there appear to be only 3 patients with partial resection. If this were the case then surely there would not be 2 groups (B and C) with ‘incomplete resection’ categorization. Also, why was Hb=100g/L taken as the cutoff for the categorization whereas in Table 4 different sex-specific cut-offs were used?

6) One major advantage of applying survival curve techniques is that it is possible to estimate the entire distribution of survival times, and not just use specific time points. It would therefore be more pertinent to compare the methods using all the available information. How different are the methods when the sub-groups of interest (eg SVC/ no SVC obstruction) are compared in terms of relative risks and probabilities of ‘cure’ (with C.I.s)?

7) Details need to be provided a) of the methods used to check the adequacy of the model and b) about assessment of the fit of the models. These details are essential given that the aim of the paper is to compare the four statistical methods.

8) Confidence intervals must be provided and interpreted, for the survival proportions presented (Tables 2-7).

9) The lack of information on important predictors such as TNM staging & type of treatment should be discussed as limitations. Also, the details given of the treatment regimes (in the 1st and 2nd paragraphs of the Results section) are not necessary, given that these variables are not used in the analyses.

10) The long accrual period (approx. 18 years) may also be a potential limitation, which should be addressed.

11) Conclusions. The authors conclude that log-normal survival analyses should be utilized more frequently to assess prognosis and predictive effects. The advantage of the log-normal model over the widely-used Cox model based on the analyses presented is, however, unclear.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1) The follow-up cut-off date is reported as Feb 2002 in the Abstract. In the main text, it is stated only that...
there was a review of charts of individual patients followed to the end of 2005. The cut-off date needs to be clarified.

2) The proportions of missing values should be given in Table 1 so that it is clear why chemotherapy/radiotherapy details could not be used.

Discretionary Revisions (which the author can choose to ignore)

None

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests.