Reviewer's report

Title: Experimental and clinical experimental studies on carcinoembryonic antigen-related cell adhesion molecule 1 in non-small-cell lung cancer: how does CEACAM1 manifest

Version: 2 Date: 25 March 2013
Reviewer: Robert Kammerer

Reviewer's report:

The paper by Zhou et al. is dealing with a very interesting issue. The authors have analyzed the amount of CEACAM1 in the serum of NSCLC patients and healthy controls, in order to estimate the impact of serum CEACAM1 levels as a tumor marker. This is of particular importance since CEA and NSE, serum markers currently used, are of limited value. The authors demonstrate that serum CEACAM1 levels can differentiate between cancer patients and healthy controls. Surprisingly the CEACAM1 levels were more pronounced during early disease than at tumor stage III and IV, respectively. Remarkably, mRNA levels in tumor tissues were not significantly higher in tumor tissues than in adjacent tumor free lung tissues. However, there was a negative correlation between CEACAM1 mRNA level and extension of tumor invasion. Finally the authors describe the expression of CEACAM1 short and long isoforms in tumor and normal tissues. Interestingly, they found that in tumor tissues the short isoform is predominantly expressed while in normal lung tissues the long isoform dominates.

This is an interesting paper, however the mechanism underlying their observations were not addressed. This limits the impact of the paper. In addition, there are some result that are not sufficiently discussed in the present form of the paper.

Major Compulsory Revisions

The comparison between CEACAM1 as a serum tumor marker with CEA and NSE is problematic, since sensitivity and specificity strongly dependent on the cut off level and also on each other, therefore sensitivity should be compared at similar specificity levels and vice versa. This has to be corrected. (Supp. Table 2 and page 4 “CEACAM1 serum levels” last paragraph.)

An other problem of the study is that there is no information of the tissue included into the study. Is the CEACAM1 expression of the sample relevant to the complete tumor? Why are the S-L ratios so different within the normal tumor samples? Inclusion of immunohistological data would improve the paper.

Figure 2
A. What are the characteristics of the tumors that express very high CEACAM1s mRNA levels?
B. The picture should be increased since the bands are almost invisible. And the
result for GAPDH should be added.

The authors discussed in the paper that the level of CEACAM1 in the serum may depend on the amount of soluble splice forms of CEACAM1 expressed in the tumor unfortunately the authors did not analyze the expression of them in the tumor, which could be easily done by RT-PCR.

Minor Essential Revisions
Table 2
The median (8.60) for Grading G1-G2 seem to be wrong because it is out of range 3.20x103 – 0.172
“Squamous cell carcinoma” has a wrong font size.

Discretionary Revisions
None

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

There are no competing interests