Reviewer's report

Title: Influence of Mucin-1 on grading, staging and overall survival evaluated in sera and tissue of ovarian cancer patients

Version: 1 Date: 14 June 2012

Reviewer: Harriet Feilotter

Reviewer's report:

The manuscript “Mucin-1 and its relation to grade, stage and survival in ovarian cancer patients” by Engelstaedter et al describes studies to investigate the use of MUC1 expression for diagnosis or prognosis of ovarian cancer. Overall, the manuscript is clearly written and very concise, but some additional details would make the relevance much easier to see and additional analysis of the data would add substantially to the interest generated by the findings.

Major compulsory revisions:

1) The background section is short and would benefit from additional description of the known role of MUC1 in cancer and as a prognostic biomarker, the CA 15-3 and CA 27.29 assays and their relationship to each other. Much of the discussion section might fit better in the introduction since it explores the use of MUC1 as a biomarker or therapeutic target in epithelial cancers. That doesn’t really fit in the discussion, since that’s not the context of the work done, but it would certainly help flesh out the introduction.

2) The first aim investigated the use of either CA 15-3 or CA 27.29 assays on sera from patients with benign or malignant ovarian disease. While the median expression was very different between the groups for both markers, the variability within the malignant group was too high to support the use of these markers as routine diagnostic tests. The discussion suggests that neither marker had potential to displace CA125 as the marker of choice in ovarian cancer, but as this statement was not backed up with data (either from the literature, or, perhaps more importantly, within the cohort in this study), that seems difficult to assess. If CA 125 currently represents the best marker available, why wouldn’t one assess CA 125 levels in these samples as well, and then compare the characteristics of each of the other assays against that standard?

3) There is no further analysis of the CA 15-3 or CA 27.29 expression within the group of malignant samples. Given that the authors divided the malignant samples in subtypes, was the variability within each subtype just as high or did these markers perform better in one subtype over the others? Additional analysis should be done if the numbers support this.

Minor essential revisions:

1) The second aim made use of a series of ovarian tumours to investigate the
expression of MUC1 by IHC using antibodies against two different epitopes of MUC1. Again, additional background on the differences between the antibodies and their behaviour would have been useful, especially given the drastic difference in expression seen using these antibodies in the tumour samples.

2) Of the 37 samples that were positive with VU-3-C6, were they all positive with VU-4-H5? Were they a particular subtype? Additional data could easily be derived and presented to further investigate these differences and explore the differences between the behaviour of these antibodies as prognostic tools.

3) What does staining for either antibody look like in a series of controls?

Discretionary revisions:

None noted.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.