Reviewer's report

Title: Inflammation-regulating factors in ascites as predictive biomarkers of drug resistance in serous epithelial ovarian cancers

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Reviewer: Antonella Naldini

Reviewer's report:

This manuscript by Lane et al, details experiments aimed at defining the inflammation-regulating factors in ascites as predictive biomarkers of drug resistance in serous epithelial ovarian cancers (EOC). The authors showed that median ascites levels of IL-6, IL-10 and osteoprotegerin (OPG) were significantly higher in women with advanced serous EOC than in control, while no significant difference was observed in the median ascites levels of leptin, soluble urokinase plasminogen activator receptor (suPAR) and CCL18. They also reported that IL-6, IL-10 and OPG appeared to be valid biomarkers for distinguishing EOC from benign controls. They finally showed that while the analysis of individual cytokines revealed low discriminating potential to stratify patients according to their sensitivity to first-line treatment and that the combination of biomarkers with the highest discriminating potential was with CA125 and leptin. They conclude that IL-6 was found to be strongly associated with advanced serous EOC and could be used in combination with serum CA125 to discriminate benign and EOC, while combination of serum CA125 and ascites leptin was a strong predictor of clinical resistance to first-line therapy.

Overall comments

This manuscript provides some data to further support the relevance of IL-6 in serous epithelial ovarian cancer (EOC). The methods are appropriate and well described. Although this study provides some interesting findings, the conclusions are not fully supported by the data. Thus, only with the addition of further results, the paper could be significantly improved.

Major compulsory revisions

1. The title: to my opinion it does not reflect the data presented, since the authors report results which are discriminating not only for the intrinsic drug resistance but also for EOC worse outcome.
2. The first paragraph of the results should be included in the introduction, as all the results refer to previous literature.
3. Fig.1: CA125 values should be added.
4. Fig.2: The authors should report a correlation analysis between IL6 and
CA125 results (as they did for CA125 and leptin in the following figure).

5. Fig.3: Data regarding leptin, suPAR and CCL18 should be added as well as all the correlation analyses with CA125 which are omitted (e.g., IL6, OPG, IL10, CCL18)

6. Fig.4: The data are more related to the ones shown in Fig.1 and may be shown immediately after.

Minor essential revisions
1. References: I think that references should be reduced, taking into account that 1/5 (11 over 55) of them belong to the authors who are submitting the manuscript.

**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'