Reviewer's report

Title: Role of malignant ascites on human mesothelial cells and their gene expression profiles

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Reviewer: Viji Shridhar

Reviewer's report:

In the manuscript entitled, "Role of malignant ascites on human mesothelial cells and their gene expression profiles" by Matte et al., authors showed the effect of malignant ascites on HPMC by altering their behavior. This is an interesting work where the authors tried to unravel the impact of ascites fluid in the progression of ovarian cancer. There are certain points in the manuscript which needs attention.

The strength of the study is the identification of the differentially expressed genes in HPMC upon stimulation with malignant ascites compared to benign peritoneal fluid and the validation of a subset of genes by Q-PCR.

Major compulsory Revisions

- Images in figure 1A, 1B and 1C need a scale bar. The authors made an interesting point about the role of TGF-#1 on the morphological variation of HPMCs treated with either serum free media or malignant ascites. It would be interesting if the authors would demonstrate if the addition of TGF #1 would make the similar morphological changes in the HPMCs as it has been exerted by ascites fluid.

- Images in figure 2A, 2B, 2C need a scale bar. P value should be added in the figure 2D. The authors need to quantify the cell proliferation of the experiments depicted in figure 2A and 2B (MTS assays or a growth curve ever a week). It would also be informative to show a time dependent and dose dependent increase in growth of these cells. Addition of TGF # antagonist to inhibit the cell proliferation induced by ascites fluid would have been more appropriate to associate with the findings from figure 1 where the authors showed an enhanced level of TGF # in ascites fluid.

- While the LPA levels were low in the ascites fluids tested- the authors should acknowledge that LPA may not have major role to play in the proliferation is the samples tested instead of categorically stating that “LPA may not be a critical factor for ascites- mediated proliferation of HPMC cells”- more so because the # of samples tested is low.

- Figure 3C lacks the data for the cell line, OV401. An additional data showing PARP cleavage would be important to support the apoptosis data in figure 3B.

- Bar diagrams in figure 6 need the error bars and p value.

Discretionary Revision

- It is interesting that the VEGF pathway was downregulated when it is generally
accepted that VEGF is the causal factor for ascites formation. Can the authors speculate as to why high VEGF levels usually present in the ascites had no role to play in the upregulation of specific pathways (given the accepted dogma the receptors for VEGF are expressed also on cancer cell lines). Are receptors for VEGF not expressed on HPMC?

Minor point

• Please provide a more detailed description of how the HPMCs were isolated and set up in culture.

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

Quality of written English: Acceptable

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

Declaration of competing interests:

No competing interests