Reviewer’s report

Title: Gastric cancer cell supernatant causes apoptosis and fibrosis in the peritoneal tissues and results in an environment favorable to peritoneal metastases, in vitro and in vivo

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Reviewer: Masakazu Yashiro

Reviewers report:

The study by Na and colleagues investigates the effect of soluble factors secreted by gastric carcinoma cells on morphology and apoptosis of peritoneal mesothelial cells. Serum free conditioned media (SF-CM) from gastric carcinoma cells induced the morphological change and apoptosis bodies in transmission electron microscopy. In vitro study, SF-CM treatment caused the increased cytotoxicity of human peritoneal mesothelial cells. SF-CM also promoted the apoptosis, which was closely correlated with Bcl-2, Bax, caspase-3 and caspase-8. In vivo study, after SF-CM inoculation into peritoneal cavity, mesothelial fibrosis and submesothelial extracellular matrix products were induced.

The findings presented in this study are potentially interesting, but there are several concerns that impact the validity of the conclusions. Several changes should be done to make it clearer and some additional data should be presented.

Major comments:

1. The main criticism is the results of morphological evaluation, including electron microscopy in the Results Section. The author described that they prepared several SF-CM from gastric carcinoma cell lines in the Methods, only the phenomenon of one cell line was shown in this manuscript. To really substantiate their claims, in study shown in Figure 1 and 2, at least one more gastric cancer cell line should be examined for confirming the responses to soluble factors are common in gastric cancer cells.

2. The purpose to do the MTT assay shown in Figure 3A is unclear. There was no describing data indicating the cytotoxicity in the cells treated with SF-CM. Thus the authors should show the necessity to examine the cytotoxic effect of SF-CM. Otherwise, these data should be eliminated.

3. The order of section is not in accordance with “Instruction for authors”.

Minor comments:

Background

Page 4 Line 2; It would be better to reword as follows: “Peritoneal metastasis results in a metastatic cascade”.

Page 4 Line 23; It would be better to add the sentences as follows: “morphology
and biological activity of peritoneal mesothelial cells-”.

Methods
Page 5 Line 19: reduce the space.

Results
Page 9 Lines 14-16: Figure 4A is low resolution. The image showing stromal components and mesothelial cells should be recommented.

Discussion
Discussion is too long and descriptive.

At the end of the Discussion, the authors should provide the specific conclusions of the work, like they have done in the abstract, referring to the data obtained. Now these specific conclusions are lacking at the end of the paper.

Figures
Figure 2B is unclear. Some kinds of denotation, such as arrows should be necessary.

Level of interest: An article of limited interest

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:
I declare that I have no competing interests' below.