Reviewer's report

Title: Serum Macrophage Migration Inhibition Factor For Diagnosing Endometriosis And Its Severity: Case-Control Study.

Version: 0 Date: 08 Apr 2020

Reviewer's report:

I read with great interest the Manuscript titled "Serum Macrophage Migration Inhibitory Factor For Diagnosing Endometriosis And Its Severity" (BMWH-D-20-00154), which falls within the aim of BMC Women's Health.

In my honest opinion, the topic is interesting enough to attract the readers' attention. Nevertheless, the authors should clarify some points and improve the discussion citing relevant and novel key articles about the topic.

Authors should consider the following recommendations:

- Manuscript should be further revised by a native English speaker.
- In the Results section, the Authors have simply reported the p values from which however it is not possible to deduce the real clinical relevance of the highlighted statistical significance. In order to better understand the results obtained, I strongly suggest reporting not only the p values but also the corresponding confidence intervals.
- What are the actual clinical implications of this study? it is important to report the results obtained by the authors in the context of clinical practice and to adequately highlight what contribution this study adds to the literature already existing on the topic and to future study perspectives.
- Accumulating evidence suggests that immune cells, adhesion molecules, extracellular matrix metalloproteinase and pro-inflammatory cytokines activate/alter peritoneal microenvironment, creating the conditions for differentiation, adhesion, proliferation and survival of ectopic endometrial cells. I would discuss these points in the light of new theories about the pathogenesis of endometriosis, referring to: PMID: 28571791; PMID: 29743986; PMID: 32046116; PMID: 32046558.
- The most common clinical signs of endometriosis are menstrual irregularities, chronic pelvic pain (CPP), dysmenorrhea, dyspareunia and infertility. Symptoms of endometriosis often affect psychological and social functioning of patients. For this reason, endometriosis is considered as a disabling condition that may significantly compromise social relationships, sexuality and mental health. I truly think that this manuscript should deserve at least few lines to stress this point of paramount importance. Authors may refer to: PMID: 31755674; PMID: 31755667; PMID: 28553145.
- I would suggest to stress the novel piece of evidence regarding the role of M1 and M2 macrophages, and of macrophage-induced apoptosis, in the pathogenesis of endometriosis (refer to: PMID: 31663401; PMID: 31717614; PMID: 27628753.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes
Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.
I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal