Reviewer’s report

Title: Cyclic compression emerged dual effects on the osteogenic and osteoclastic status of LPS-induced inflammatory human periodontal ligament cells according to loading force

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Reviewer: Prasit Pavasant

Reviewer's report:

This work was aimed to examine the effect of stress on the inflamed PDL cells. Mimicking the inflammation by adding the LPS in the medium and then subjected to the mechanical force. However, there are some points that is not clear and need further clarification.

1. The expression of RUNX2 is not only associated with osteogenic differentiation. It has been shown that RUNX2 also associated with cell proliferation (Lucero CM, et al., J Cell Physiol. 2013; Kawane T et al., Sci Rep 2018). So, if the authors want to conclude the role on osteogenic differentiation, at least they should try to perform in vitro calcification and the expression of osteocalcin. Moreover, the cell number should be examined to see the proliferation effect.

2. The authors showed the upregulation of CTSK in PDL cells, in general CTSK was used as a marker of osteoclast differentiation, what would be the function of CTSK in PDL cells, please discuss.

3. Please provide the information of LPS used in the experiment, was it represent the periodontal disease or represent what type of inflammation, since LPS from different species has different virulence.

4. It is not clear why the authors showed the protein expression of IL-1beta and TNF-alpha but not the other cytokines, especially M-CSF, since the authors want to propose the osteoclastic effect of LPS-induced PDL cells and M-CSF is one of the essential molecules required for osteoclast differentiation. Moreover, to claim the osteoclastogenetic effect, it would be nice if the authors could do the co-culture with CD14+ cells.

5. The discussion should provide some evidence or idea of the mechanism involved in this phenomena to answer the topic of this study - dual effect of cyclic compression forces on LPS-induced PDL cells, not just the effect of force on PDL cells.

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

No

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.

No

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.

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