Reviewer’s report

Title: Expression of adiponectin in the subchondral bone of lumbar facet joints with different degrees of degeneration.

Version: 0 Date: 30 Jun 2017

Reviewer: Agata Burska

Reviewer's report:

The prevalence of facet-mediated pain in clinical populations increases with increasing age, suggesting that FJ OA might have a particularly important role in older adults with spinal pain. Nevertheless, to date FJ OA has received far less study than other important OA phenotypes such as knee OA, and other features of spine patho-anatomy such as degenerative disc disease. This highlights an existing gap in research which was addressed in this manuscript. Background and the aim of the study are clearly presented. The aim of this study was to assess the expression of adiponectin in lumbar facet joints in patients with lumbar facet joint osteoarthritis.

The experimental sample group is large and sufficient number of samples was tested in each of the experiments: ELISA, IHC, qPCR to be able to detect differences. Statistical analyse are appropriate and results are presented in one table and seven figures.

Specific recommendations are listed below:

In the background section authors described that

- "… 5 cases of lumbar facet joint specimens were screened for the expression of 4 molecules using an inflammatory factor chip. Moreover, adiponectin showed a strong positive reaction."; What is an inflammatory factor chip? It hasn't been mentioned anywhere in the methods and it should be explained if this is the result of this study unless it was just an ELISA. Then only Adiponectin is stated in the next sentence and what about other molecules - please mention if they not detected. I assume that adding these small results to the introduction authors meant to justify focusing on adiponectin later in the manuscript.

- The role of Adiponectin in bone and cartilage metabolism should be expanded in the introduction as the single sentence does not give any overview to the reader on the subject (Association between adiponectin and cartilage degradation in human osteoarthritis PJ Francin, A Abot, C Guillaume, D Moulin… - … and Cartilage, 2014 - Elsevier)
In the material and methods

- Add the sentence that BMI was collected in section on clinical samples data

- English language, capitalisation and commas should be corrected. Few examples which require corrections; "First, subchondral bone tissue extraction: In the Sterile handling table", "Then, every 30mg subchondral bones (120/4 mg) were respectively determined content of IL-1β, TNF-α," "Finally, Analyze IL-1β, TNF-α, … expression and Statistical correlation"

- Were bones lysed before ELISA? The protocol description has to be corrected to reflect what actually have been done.

- This sentence is not necessary in the laboratory protocol description "Statistical correlation analysis of adiponectin content and BMIs" and should be moved in the statistical section.

- Further in the western blot section: Check brackets, capitalisation, dots and whether sentences make sense. For example: "In the Sterile …..5 mm of facet joint center. ). 50 mg stored at -80°C for qPCR. 50 mg subchondral bone was placed into a grinding device."

- It is not clear from statistical analysis description and results when Anova and when Univariate regression were performed. Please make statistical

In the results section:

- Although BMI was collected is nowhere reported in the study ie. What were the values of the studied population and how it relates to WHO classification?

- The result from table 1 would be better presented as a box plot figure. Also the results are repeated in the text and in the table which is unnecessary duplication.

- Please redo the figure 2 with the cases as dots and regression lines for both groups with r values. The figure in its actual form is not presentable although strong relationship is reported in the text (r=-0.889)

- Figures 4-7 would benefit from presenting them as 1 large composite figure with a, b, c, d sections well described in the legend.

The discussion sections should explain or propose possible role of adiponectin in the patomechanisms of FJOA. Also different adiponectin isoforms and their potential should be discussed as to which of them potentially could be affected most and be associated with FJOA.
The limitation section should be rephrased. And capitalisation checked in both limitations and conclusion sections.

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

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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