Reviewer's report

**Title:** MRI signal distribution within the intervertebral disc as a biomarker of spinal deformities

**Version:** 1  **Date:** 24 July 2012

**Reviewer:** Luca Maria Sconfienza

Reviewer's report:

Review for BMC Musculoskeletal Disorders

Title: “MRI signal distribution within the intervertebral disc as a biomarker of spinal deformities”

The manuscript deals with an evaluation of signal distribution within intervertebral disks in patients affected by scoliosis and spondylolisthesis. To knowledge, the topic has not explored before and offers points for future discussion.

*Title: I would suggest to focus the title on scoliosis and spondylolisthesis, as ‘spine deformities’ may be misleading also to different congenital deformities. Also, the population of the study is essentially made by young subjects. Consider adding this detail to title and abstract.

Abstract:

*Introduction: I would focus the attention on scoliosis and spondylolisthesis and not on spine deformities in general.

*Results: Authors describe ‘indices’ that are not clearly defined in the m/m section. Also the m/m do not include a clear indication of the fact that data were normalized in regard to CSF.

*Conclusion: authors state that variation in IVD signal intensity are not currently performed in clinics. The sentence should be rephrased, as the meaning is not retained compared to what reported in the discussion of the manuscript. Also, I would emphasize the clinical implications of the results.

Main text:

*Introduction, second paragraph: MR spectroscopy has been used to assess IVD degeneration. Authors used reference #9 in the introduction. I would suggest to introduce briefly the topic and later discuss briefly the results in relationship to the potential use of MR spectroscopy and T1rho (Zuo J, Joseph GB, Li X, Link TM, Hu SS, Berven SH, Kurhanewitz J, Majumdar S. In vivo intervertebral disc characterization using magnetic resonance spectroscopy and T1# imaging: association with discography and Oswestry Disability Index and Short Form-36 Health Survey. Spine (Phila Pa 1976). 2012;37(3):214-121.)

Methods:
*Is it correct that all subjects provided explicit informed consent also for a retrospective study?

**How long does it take to analyze data of one patient? This may be useful to know for clinical practice.

*Results: absolute values of data are not reported neither in results or tables. Consider the opportunity of adding these data.

Discussion:

*I would emphasize the clinical application of these results: how they can modify clinical practice? How the results can improve diagnosis?

**I would separate limitations in a specific paragraph.

*Another limitation is that this analysis was applied in an ideal situation, with patients affected by a single pathology. In clinical practice, however, this condition occurs rarely. Thus, the application of this system in clinical practice may be more difficult. Also, I would emphasize that these results are obtained in young subject. Thus, application of this system in elderly subjects may produce dissimilar results.

*=major compulsory revisions

**=minor revisions

Sincerely.

Luca Maria Sconfienza, MD, PhD

**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 to declare.