Reviewer's report

Title: Hard physical work combined with heavy smoking or overweight may result in painful vertebral bodies

Version: 1 Date: 5 July 2007

Reviewer: Massimo Mariconda

Reviewer's report:

General

The article deals with an interesting topic and the question posed is well defined by the authors. Indeed, associations of the so-called Modic changes in vertebral endplates with clinical symptoms are controversial and also the casual factors of these changes have not been fully clarified so far. Nevertheless, several flaws concerning both methods and results are recognisable in the study.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Methods (Outcome variables). Would it not have made sense to also conduct an analysis correlating the pain with the MRI abnormalities? This would have completed the triangle of abnormalities vs work factors, LBP vs work factors, abnormalities vs LBP. The interrelationships and clinical relevance is difficult to interpret unless you can also show that the abnormalities per se are associated with more pain.

2. Methods (Explanatory variables. Table 2). What counted as a “hard physical work”? You should give qualitative (i.e. self-perception of a heavy workload, manual handling of materials, awkward postures, static sitting or standing work posture, and occupational driving exposure) and quantitative data (time spent at work) on the workload of the subjects. Also, the lifetime work exposure and psychosocial distress at work should be considered in the analysis.

3. Methods (Data analysis). Your multivariate analysis should be adjusted for confounding factors that can modify the relationships between explanatory and outcome variables (i.e. family predisposition, educational level, practice of sports, lifetime work exposure, psychosocial work-related risk factors etc). Models of multivariate regression analysis would be more fit for this purpose.

4. Methods (page 7, line 9). You did not give data on the duration of smoking habit, previous tobacco use and time elapsed from the suspension of smoking. The duration of smoking habit can be of interest for its detrimental effects on bone (reduced BMP and microfractures) and other organs (nicotine-induced vasoconstriction). Please provide data on the duration of smoking habit, rather than just saying that is possible that it was fairly similar for most smokers.
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Title: You didn't actually find any correlation between self-reported LBP and hard physical work combined with other explanatory variables neither you checked relationship between VIP and LBP. The word “painful” should therefore be avoided.

2. Abstract: In the results section you say there were no significant associations between the single explanatory variables and pain or disc degeneration. In the conclusions you state that the association between VIP and hard physical work and heavy smoking may have consequences on the prevention of LBP. Make sure the two sections of the abstract give consistent figures.

3. Results (page 8, line 33; table 5). You say hard physical work combined with overweight was predictive of DD and VIP, with positive gradients going from having neither factor to having both factors, but in Table 5 the combination of these explanatory variables was not significantly associated to DD and there was not positive gradient of odd ratios. Please decide which one is correct and make sure the text and table give consistent figures.

4. Discussion (page 10, line 21 – “What did we find?”). You did not find significant associations between hard physical work combined with heavy smoking and self-reported LBP variables. Please change the text.

5. Discussion (page 11, line 5) You say “the prevalence of VIP was higher with increasing loads, in relation to body weight or type of work...”, but you did not find significant positive association between BMI and VIP. The heavy overweight was instead protective (see table 4). Please rephrase.

6. Discussion (page 11, line 17) and Conclusions. The reference no. 62 concluded that there is evidence for a dose-response relation between physical workload and LBP. You didn't actually find any correlation between LBP and hard physical work neither you carried out an analysis correlating the LBP with the MRI abnormalities. These sections should therefore be rephrased.

7. Conclusions. You need to clearly state that, whilst a higher degree of physical exposure was associated with VIP, it was not associated with the self-reported LBP in the current study. If you had looked at the relationship between the MRI changes and LBP you could have shed some light on this.

8. References. Relevant references on the relationship between occupational variables and MRI changes of the lumbar spine have not been included in the list.

Discretionary Revisions (which the author can choose to ignore)
1. Introduction: (Smoking or overweight paragraph, page 3; line 24): Please provide bibliographic data to support your sentence “sciatic pain can be considered a proxy measure for disc degeneration”.

2. Introduction (page 4, line 1): I suggest to delete the word “Nevertheless”

3. Introduction (page 4, line 44): Please provide data regarding the high frequency of heavy smokers among people in the lower social classes.

4. Methods (page 7, line 23). Please give the Kappa values for the test-retest reliability data, rather than just saying there was satisfactory intra- and inter-examiner agreement.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests