Author's response to reviews

Title: Assessment of nerve involvement in the lumbar spine: association between magnetic resonance imaging, physical examination and pain drawing findings

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Author's response to reviews: see over
Answers to Reviewer’s reports

To Reviewer #1

We have revised the manuscript according to all the suggested details mentioned:

- page 4 2nd sentence "this is because............."
- page 4 End of 3rd sentence - removal originating
- page 4 4th sentence "MRI can be deemed to be too sensitive....."
- end page 5 southern ethics board
- page 7 1st paragraph “findings were assessed and graded as noted in the protocol or as described below...."
- page 16 weak not week

To Reviewer #2

Major issues:

- “the study sample is far too small for all these analyses”
  - This limitation is commented on in the discussion on page 20, 1st paragraph

- “the rationale behind the analyses is too simplistic because it is not clinically relevant to study single clinical findings taken out of context in relation to the MRI-findings”
  – This study was set up to be able to compare single MRI findings with different single physical examination findings and the pain drawing per se and not with the complete clinical assessment which we consider is a different study which we may present in another report. The common clinical situation in our area is that a clinical decision on the patient’s status – nerve involvement or not – is simply made on the radiologist report of MRI visible nerve involvement, sometimes weighed or compared with a straight leg raising test but seldom any more. If there is no visible nerve involvement the patient is often considered as having nociceptive or psychogenic pain and treated by the medical and insurance staff as such with all too often a poor outcome in all aspects of life. With this study we try to open a new way of thinking – not to undermine the MRI as an important preoperative method - but rather we want to show that the MRI is not enough to determine if the patient has neurological involvement and that there are different neurological test to show this – each test with a its own prevalence.

- “your interpretation of the findings does not take into account the fact that it when the discal prolapse is gone, it is fairly common with long-term sequelae”
  – This is commented on further in the discussion page 15, line10 and also in the last paragraph on page 15 continuing on page 16

- “reliability is an important issue. It being so poor in the lower spinal levels for MRI readings merits to be discussed under limitations”
  – This is commented on under limitations page 19, last paragraph

- “reliability and validity for the three types of variables (MRI, clinical examinationand pain drawing”
  – This is commented on further in the discussion page 19, 1st paragraph, on request several references have been added making the list considerably longer but hopefully good enough
• “what for you, constitutes a normal finding in relation to the MRI assessment …if “slight” is defined as <50% decreased disc height”
  – All assessments made by a radiologist or any other medical personnel are subjective to some extent. This is obviously the case in this assessment as well as all other. The definition slight is contrasted to significant by the added definition but both are considered not normal and we do believe most readers will understand this without further explanation. Actually there is no further explanation than that normal is what the radiologist considers to be normal.

• “Also, why are they “additional (definitions)”? Are they post hoc definitions developed in the course of the data analysis because the other variables were found to be lacking?”
  – All definitions were decided upon and written before the start of the study but we did not want to clutter the MRI protocol (Appendix 3) with all details and therefore they were written on a separate paper. We have added a few words of explanation on page 7, line 7-8

• “Was the kappa analysis for the MRI variables applied on the detailed findings or on overall findings?”
  – Kappa was applied to the detailed findings as noted on page 8, line 6

• “I do not understand your statistical methods. Are you looking for associations or agreement?”
  – A relation between two variables can be described in different terms (relation, correlation, agreement, association etc). We have decided to consistently use the word agreement and have therefore changed the word association to agreement throughout the article.

• “Is the McNemar’s test really the method of choice and is it interpreted correctly?”
  – The Mc Nemar test is a non-parametric test used for testing association or agreement between columns and rows when the data are paired and the sample is small. It is interpreted correctly.

• “If you have not used a professional statistician on this issue, please make sure that you do check with such a person.”
  - One professor in medical statistics and two assistant statisticians have been closely involved in the statistical analyses of this material and remains firm in the choice of statistical method McNemar test is the test to be used – no other.

• “Table 3 and Ad. Table 3. In the heading you write “Association between…” but in the table itself you write “Agreement”
  – We now consistently use the word agreement throughout the article as mentioned above.

• “the clinical examination cannot be considered a gold standard for a concomitant pathological mechanical nerve interference”
  – This matter is commented on in the first chapter of limitations where we discuss the lack of a golden standard other than the IASP definition of neuropathic pain detection which is based on the pain drawing and sensitivity testing.

• “ In the result section, you need to separate the reliability results from the descriptive data and the cross-tabulations.”
  – This has been done on page 9.
• “it is to be expected that there are more clinical findings of nerve injuries than MRI findings of acute nerve interference. You need to devote a considerable amount of space in your discussion section to relate to this fact, including bringing references from studies”
  – In the discussion page 15-16 we further elaborated on some of the possible reasons for discrepancy between MRI and physical examination findings of nerve involvement as well as on the importance of recognizing signs of nerve involvement
• “not a good idea to recommend yet another study with a heterogeneous patient material”
  - We have changed this statement to more instead of less homogenous

Minor issues:
• “I am not sure that results will become less “reliable” just because there are few findings.”
  – We have replaced the word reliable with meaningful to avoid confusion
• “a weird conclusion, based on refs 19-22 on page 15 in your discussion section. “Non-specific pain per se may be more detrimental than pain due to a known cause and may contribute to the poor outcome of low back pain treatment”. I know some of these references and I cannot understand how you conclude what you did in this phrase. These studies have not looked at the issue you mention here. You need to check that out or remove the references, as your statement as such makes perfectly sense and does not need to be supported by any experimental data of any sort.”
  – The references refer to the fact that present day treatment of low back pain is not very effective. We have omitted two references.
• “Background, line 6, word missing after “originating””
  - The word originating is omitted.
• “Clinical examination is fairly subjective, depending on the subjective reporting by the patient and the subjective interpretation of this reporting by the clinicians. Please explain how you can state it to be subjective or rectify”
  – We have omitted the word objective even though in clinical situations the physical examination findings are referred to as objective as contrasted to the anamnesis.
• “Methods, first para, the study started in September 2004 but it was completed when?”
  – The study started in February and ended in September as noted on page 5 line 3.
• “P. 7. I do not understand the sentence “Each radiologist made independent assessments that were repeated before and after reading the patient’s history from the referring physician””
• “A reference for your McNemar’s test is needed in the analytical methods, if you really will keep this test (after discussions with statistician)”
  - A reference to Altman is included and yes we really keep this test.
• “Results section under prevalence of findings. What about the medulla cord signal and bone protuberance? How were they different from the others?”
  - We do not understand this comment…we only state that he least prevalent MRI finding was that of visible medulla cord signal.
• “P.10 under “Pain drawing findings of nerve involvement”. The first sentence of that paragraph does not stand on its own. What was found in 95% of patients?”
  - A neuroanatomical distribution pattern of discomfort indicating nerve involvement originating in the spine were found in 95% of the patients. This has been explained.

• “P.13. Your statement that the sensitivity that increased significantly from 16% to 29% surely lacks clinical interest. Why mention it at all?”
  - This statement has been omitted.

• “In the discussion section, p.14 second line you speak of associations but where were these reported?”
  - This is reported in the result section page 11 2nd and 3rd paragraphs.

• “12. In the tables the word “dichotomised” has been written “dikotomised””
  - This has been corrected