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

- Comment: How do we know that the physical clinical examinations are robust and reliable? Answer: we have performed two previous studies on the reliability of clinical examination tests in the assessment of patients with spinal pain and refer to these studies in the discussion under the heading `Limitations´ on page 17-18 where we also include the published references # 46-50.

We do acknowledge that the lack of an absolute golden standard for detection of nerve involvement is a first and major limitation. However, we believe that our observations may serve as an eye-opener to the idea of using a thorough clinical neurological examination in the assessment of patients with lumbar pain and that further studies are needed to confirm or reject the reliability and association between clinical examination tests and other methods to detect nerve involvement as indicated on page 19 under the heading `Future studies´.

The cited work by Hanne Albert would be very interesting to read. However in the Pubmed and other internet sources we find her articles on MRI and Modic changes but not about dermatomes.

- Comment: MRI not done under loading. Answer: This comment has been elaborated on in the revised manuscript, page 15 last section - continued on page 16.

- Page 5 – PE stands for physical examination, the abbreviation has been omitted.

- Page 5 – why 123 patients? Answer: We held the door open/ invited patients until we had included exactly 100 patients in the MRI study. Of these 61 made an MRI of the lumbar spine and 39 of the cervical or thoracic spine. 23 patients were excluded as explained in the methods section under heading Setting and participants, page 5.

- Page 5 – an instead of the ethical board. The reason to use an instead of the is because at that time the Karolinska Institutet had at least 2 ethical boards – one northern and one southern.

- Page 6 – physical examination. We have added information about the sensibility testing procedure at the end of page 6 under the heading `A second assessment based on a structured physical examination´ and refer to appendix 2 for further details on the physical examination.

- Page 9 – the belief of the patient in MRI. We do agree that this is an interesting observation that may be representative for this population of patients with back pain and that is why we discuss it on page 14-15. However, we feel our present data may not merit further elaboration.
To Reviewer #2

- Comment: Include only nerve impingement variables.
  Answer: We have considered this idea to make table 2 less detailed. However, one of the possible explanations to the discrepancy between the MRI and the physical examination findings is that it is not only standard MRI-visible nerve involvement that may produce clinical findings of nerve involvement. In the discussion on page 16 – first paragraph - we comment on the possibility of other MRI-findings as potential causes of nerve involvement. We feel that this is an important aspect in this article and therefore table 2 should include those other variables. However, we may omit part of table 2 and make it appear as additional file if so required.

- Comment: Have a clinician make a clinical conclusion on nerve involvement and look at the association between this and the MRI.
  Answer: This is another, also clinically appropriate, way of evaluating our data that may be done in a future study. The present article is focused on association between basic findings done in the MRI and the physical examination and may serve as a base for future studies.

- Comment: the study sample is small and therefore the number of variables should be reduced.
  Answer: for this purpose we dichotomised graded findings and summed up findings at each spine segment to a location called “any” and also a summary of all segments and locations in the “T11-S1 mean of any” which we focus on in the result and discussion sections. However, we want to provide the much interested reader with sufficient data to follow our thinking and be able to make their own conclusions and compare with future studies and therefore suggest that table 3 and 4 be left intact. More detailed data appear as additional tables.

- Comment: Tell in the abstract that assessments were done blindly.
  Answer: we have included this information in the abstract.

To Reviewer #3

- Comment: assessment of pain drawing is subjective and therefore physical exam important
  Answer: We inform about the subjective assessment of the pain drawing in the Method section, page 6 first paragraph. In the Result and Discussion sections we emphasise that the main comparison is the association between MRI-visible nerve involvement and the neurological physical examination findings, not the pain drawing.

- Age dependent MRI findings? This valid question may be evaluated in a future study but we do not consider it would add clarity to the aim of our present article.