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RESPONSE TO LETTER

Study of the Distribution of Lumbar Modic Changes in Patients with Low Back Pain and Correlation with Lumbar Degeneration Diseases [Response to Letter]

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Dear editor

We thank the Editor-in-Chief for the opportunity to respond to the letter from Kovacs et al regarding our study.[1] And we thank Kovacs et al for their interest in our work, which is an honor. Below is the response to the letter.

On the one hand, the subject of our study was the correlation between lumbar degenerative disease and Modic changes and the distribution of Modic changes in the context of low back pain. On the other hand, "In conjunction with this study, more aggressive anti-inflammatory therapy should be given to patients with simple Modic changes", this study is only an inference in discussion.

1. We cited the study of Kovacs et al[2] for supporting the relationship between spondylolisthesis and Modic changes. In fact, in addition to that, Modic changes are most common in type II, Modic changes are associated with disc degeneration, and the lower the segment the higher the probability of Modic changes, all of which are consistent with the results of our study. The relationship with age was not the same as in this study. In addition, our inference about the relationship between low back pain and Modic changes is not consistent with another study.[3] We speculate that this might be related to the different populations selected, both studies[2,3] selected southern European subjects, while we chose patients with low back pain in northeastern China, and we believe that the consistency and differences in these findings are acceptable.

2. The available evidence for the relationship between low back pain and Modic changes is not uniform. A recent review suggests that intervertebral disc calcification is associated with Modic changes that are highly correlated with pain and disability. This may be similar to the development of subchondral bone marrow lesions in the knee, which are associated with osteoarthritis-related pain. However, further mechanistic studies are needed.[4] Moreover, there is a new systematic review suggesting that the available evidence is not sufficient to judge whether most MRI findings are associated with future pain and disability. However, the only exceptions are Modic changes and disc degeneration, which are associated with slightly worse pain and disability outcomes.[5] And, this study, similar to the study[6] cited in the letter to illustrate the relationship between low back pain and Modic changes, concluded that imaging should not be overly prioritised for low back pain. And we read through the latter[6], however it does not mention any Modic changes. We read through the other two studies[3,7] and indeed, as Kovacs et al state, there are instances where MRI degenerative findings have no clinically significant association with low back pain. However, Kasch[7] speculates that for Modic changes, the difference in conclusions may be due to differences in study design, sample characteristics, and so on.

3. We have read the study by Kovacs et al and agree with their conclusions.[8,9] However, in the discussion in study[2] on Modic changes in patients with chronic low back pain in Southern Europe, they also mention that although there is a limitation in the reliability of MRI assessment, this limitation is real regardless of the strength of the magnetic field, the terminology used, or the clinician's experience and expertise, and that it should be recognised as an inherent limitation when using lumbar spine MRI in both experimental and clinical settings. We also agree with the above. We did write

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slightly briefly about the acquisition of the MRI diagnosis, which was performed by two experienced radiologists, with concordant results completing the diagnosis, and discordant results resulting in a final diagnosis by another chief physician, none of whom had any knowledge of the patient's clinical symptoms.

4. Thank you for constructive comments on our study. Due to the unavailability of lumbar MRIs in healthy individuals, we were unable to conduct a case-control study as Kovacs et al did,[3] and we feel that the study is good, and that a study along these lines of low back pain and Modic changes in a population of patients from northeastern China may lead to more accurate conclusions. As for the statistical methods, our statistical methods were concise and correct enough to prove that lumbar degeneration and Modic changes are related and to draw our inferences from this.

Thank you again for your suggestions, we have decided to continue to research this topic in depth.

Disclosure

The authors report no conflicts of interest in this communication.

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