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Is there a relationship between chronic low back pain and spinal sagittal balance? A prospective controlled study

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Dear Editor,

With great interest, I read the article titled "Is there a relationship between chronic low back pain and spinal sagittal balance? A prospective controlled study." by Korkmaz et al.[1] The authors evaluated the relationship between chronic low back pain and spinal sagittal alignment. They showed that deviations from normal sagittal verticalaxis (SVA) are a significant contributor to low back pain. I congratulate the authors for their contribution to this topic. However, I have some comments regarding this study.

The authors measured SVA, thoracic kyphosis (TK), and lumbar lordosis (LL) values on the lateral whole-spine radiograph, but they did not include the other spinopelvic parameters such as, sacral slope, pelvic tilt and spinosacral angle. In the literature, association between these sagittal parameters and spinal sagittal balance function has been reported in patients with low back pain.[2,3] Spinopelvic parameters and balance function are associated with a greater risk of low back pain. Therefore, the role of sacral slope, pelvic incidence, spinosacral angle and pelvic tilt could not be neglected. It may be beter to combine the information from both SVA, TK, LL and these spinopelvic parameters to assess the spinal sagittal balance function and postural instability.

Additionaly, Niu et al.[2] also measured T1 pelvic angle, T1 spino-pelvic inclination and T9 spino-pelvic inclination to assess the sagittally imbalanced spine, which may affect the posture and low back pain. I would prefer to see the effects of these parameters and their relationship between chronic low back pain and posture, which could improve the understanding of spinal misalignment.

Moreover, spinopelvic parameters were measured using lateral whole-spine radiograph. However, 3D analysis of the spine surface for posture assessment provides more precise results. With 4D technology, which pioneered functional clinical measurement technology, measurement accuracy is increased, and postural variants can be avoided. While such technologies allow for more diagnostic imaging of the spinal misalignment, X-rays are more readily available and less expensive. Although whole-spine radiograph is easily accessible, It would be beter if the authors could use the more sensitive and radiation-free measuremen tsystems, such as three-dimensional motion analysis of the spine and pelvis, which could affect their results. In this regard, rasterstereographic analysis of the spine and pelvis has been reported to be a valuable tool in patients with lowback pain and spinopelvic disorders.[4,5]

Finally, how did the authors calculate the sample size in this study? Although the authors stated that the small number of subjects was a limitation for the study, they did not explained the determination of the sample size of the study.

ETHICAL DECLARATIONS

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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