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RESPONSE TO LETTER

Effect of Contralateral Acupuncture (Geoja Technique) in Musculoskeletal Disorders Stratified by Pulse Strength Differences: A Retrospective Study [Response to Letter]

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Dear editor

We appreciate the reviewers' thoughtful comments regarding our article, "Effect of Contralateral Acupuncture (Geoja Technique) in Musculoskeletal Disorders Stratified by Pulse Strength Differences: A Retrospective Study" published in the Journal of Pain Research. The observations concerning lack of standardization in pulse diagnosis, limitations in study design, non-operationalized syndrome differentiation criteria and absence of syndrome-specific efficacy analysis, insufficient use of Korean medicine–oriented efficacy indicators, and recommendations for future research provide valuable insights that will serve as important reference points for subsequent investigations.

We are grateful for the opportunity to engage in this scholarly dialogue and to elucidate the methodological rationale underlying our investigation. In the following response, we address each of their concerns and share our perspective on advancing the evidence base for contralateral acupuncture (Geoja technique).

Response to the Comment on Lack of Standardization in Pulse Diagnosis

We fully agree that the classical pulse diagnosis system is a comprehensive diagnostic framework encompassing pulse position (depth), pulse shape (eg, wiry, slippery), pulse rate (frequency), and pulse rhythm, among other attributes.

In clinical practice, pulse assessment involves two complementary perspectives: total observation and segmental observation. These approaches are not mutually exclusive but are both essential for accurately understanding a patient's condition. Segmental observation examines the pulse at the three positions—Chon (distal), Gwan (middle), and Cheok (proximal)—individually, and evaluates the superficial, middle, and deep levels using a single finger. This method corresponds directly to the "one-finger" technique and allows for refined and localized pulse assessment. In contrast, total observation (Chongkan) provides a broader, integrated understanding of the pulse but may not sufficiently reveal the specific pathological location. Conversely, relying solely on segmental observation may obscure the overall physiological pattern.[1] Therefore, the two approaches must be applied together to obtain a comprehensive and clinically meaningful pulse diagnosis.

At the time of conducting this study, the raw clinical data indeed contained detailed classical pulse diagnostic elements. For the purpose of this study's design, however, we focused on the principle described in the Huangdi Neijing: "When the pulse is strong on one side and the illness is on the opposite side, acupuncture should be applied to the healthy side".[2] This classical dictum forms the theoretical basis of the Geoja technique (contralateral acupuncture). In the present

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analysis, we operationalized the phrase "dominance of left–right pulse strength" as the measurable variable of pulse strength difference and used it as a primary stratification factor.

Thus, the present investigation represents a preliminary effort in operationalizing a core classical principle within modern clinical methodology. As the reviewers rightly pointed out, future research should incorporate a more granular and expanded evaluation, including location-specific differences in Chon–Gwan–Cheok pulse strength, relationships between pulse characteristics and specific Zang–fu or meridian patterns, and multi-layered analyses involving pulse shape, depth, and rhythm. We hope that the present work serves as a foundation for advancing scholarly discussions and stimulating further rigorous research on Geoja acupuncture and pulse-based clinical differentiation.

Response to the Comment on Limitations in Study Design

As stated in the title, this study was conducted as a retrospective observational analysis. Such retrospective designs inherently involve several limitations. First, because the data have already been collected, it is difficult to fully control for potential confounding variables. Second, the data were not originally gathered for research purposes, which introduces constraints regarding their accuracy and consistency.[3] Third, there may be selection bias arising from the process of identifying eligible patients within specific clinical populations.[4] Fourth, due to the lack of control over temporal sequence and intervention conditions, retrospective studies generally have limited ability to support causal inferences.[5]

These limitations were clearly stated in the discussion section of our manuscript.[6] Despite these constraints, retrospective studies offer unique advantages: they utilize data derived from real-world clinical practice, making them particularly valuable for hypothesis generation and for enhancing the practical applicability of findings.[7] In this context, our study aims to present initial evidence supporting the hypothesis that patients with pronounced differences in pulse strength may experience greater therapeutic benefit from contralateral acupuncture. We hope that these findings serve as a foundation for more rigorous prospective studies in the future.

Response to the Comment on "Non-Operationalized Syndrome Differentiation Criteria and Lack of Efficacy Analysis by Syndrome Type"

As noted earlier, this study was conducted as a retrospective observational analysis and therefore carries inherent methodological limitations. Because retrospective data are not collected for research purposes, it is difficult to consistently obtain detailed information on constitution types and syndrome differentiation, resulting in structural constraints on the dataset.[8] For this reason, we selected pulse strength—one of the most consistently available and reliable indicators in the existing records—as the primary stratification variable. This was a pragmatic decision aligned with the nature of retrospective research.

Moreover, incorporating excessively heterogeneous variables—such as individualized acupoint combinations, needle manipulation techniques, or variations in retention time—would have significantly hindered the ability to conduct a meaningful efficacy analysis. In addition, given the limited sample size typical of retrospective studies, further subdividing patients according to constitution or syndrome type would have markedly reduced the statistical power.[8]

Thus, while we acknowledge that the study did not fully account for individual constitution or syndrome differentiation, the inability to consistently secure such information within retrospective data made this unavoidable. At this preliminary stage, the primary objective was to assess the baseline therapeutic responsiveness to contralateral acupuncture under a standardized protocol. This approach minimized excessive heterogeneity and enabled an initial exploration of treatment effects.

We believe that the present findings can serve as foundational data for future prospective studies, in which constitution- and syndrome-based individualized acupuncture protocols may be examined more rigorously and with greater methodological precision.

Response to the Comment on Lack of Korean Medicine–Oriented Efficacy Evaluation Indicators

In this study, we utilized pain intensity and range of motion—two of the most fundamental indicators for evaluating musculoskeletal disorders—as primary outcome measures. These variables were selected because they were the most consistently and reliably available within the retrospective dataset. While we fully recognize the importance of Korean medicine–oriented evaluative elements, the lack of standardized and validated traditional Korean medicine (TKM) assessment tools in current clinical practice poses challenges for their reliable and reproducible application in retrospective research.[9]

We agree entirely that traditional TKM-specific indicators are essential for a more comprehensive evaluation of acupuncture efficacy. However, we believe that future research should not be confined to a dichotomy between Eastern and Western evaluation frameworks. Rather, modern scientific investigation should move toward integrative, multilayered analyses that examine how acupuncture stimulation influences physiological, qi–blood, neurological, and immunological processes.

To achieve this, future studies should expand beyond conventional TKM assessment systems and incorporate a broader array of biomarkers and physiologic metrics, enabling a more precise and mechanistic understanding of the effects of contralateral acupuncture (Geoja technique). Such integrative approaches will help elucidate the multidimensional nature of therapeutic responses and strengthen the scientific foundation for its clinical application.

Response to the Comment on Recommendations for Future Research

We wholly endorse the recommendations that future investigations should advance standardization of pulse diagnosis, adopt prospective clinical designs with adequate control groups, refine meridian-based syndrome differentiation systems, and establish integrated efficacy evaluation frameworks synthesizing traditional and contemporary medical assessment modalities.

Notably, our research group is actively developing a pulse diagnosis device incorporating clinically meaningful parameters to provide standardized diagnostic criteria for contralateral acupuncture. Additionally, we are designing randomized controlled trials with diverse research objectives to strengthen the clinical evidence base for Geoja acupuncture. Beyond integrating traditional Korean medicine assessment methods with contemporary biomedical functional measures, we are developing a biomarker-driven, convergence-based evaluation system that incorporates advanced technological approaches from biotechnology, information technology, and related disciplines.[6]

This integrated framework will enable comprehensive, mechanistic evaluation of acupuncture efficacy and substantially contribute to strengthening the scientific foundation for its clinical application in treating musculoskeletal disorders.

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Disclosure

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