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CORRESPONDENCE

Correspondence on "Usability of shear wave elastography to predict the success of extracorporeal shock-wave lithotripsy: prospective pilot study" by Demir et al.

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Dear Editor,

We read the study by Demir et al., titled *"Usability of shear wave elastography to predict the success of extracorporeal shock-wave lithotripsy: prospective pilot study,"* published in your esteemed journal, with great interest [1]. We appreciate the authors' efforts to explore alternative methods that could potentially reduce the use of radiation-based imaging techniques, which are frequently employed in the diagnosis, treatment, and follow-up of kidney stone disease and carry notable risks to human health. We also recognize that this article is one of the pioneering studies on this topic. However, we have significant concerns regarding the suitability of Shear Wave Elastography (SWE) for such measurements. In particular, we question whether the basic working principles of SWE are applicable for evaluating the properties of kidney stones.

According to publications that outline the fundamental principles of SWE, this method measures tissue elasticity by detecting the propagation of shear waves generated through the application of acoustic radiation force [2]. These waves propagate at varying speeds depending on the tissue's elasticity, and these speeds are detected by the ultrasound probe. As the stiffness of the tissue increases, the wave propagation accelerates, and this data is processed to create a color-coded elastogram representing tissue elasticity. However, *kidney stones are rigid*, *crystalline structures* composed of high amounts of minerals and *lack elasticity*. The limitation of SWE in this context stems from its inability to assess non-elastic structures such as stones. In an article explaining the principles and clinical usage areas of the SWT method, while mentioning the possible usage areas in the musculoskeletal system, it was stated that it could be used in elastic tissues such as muscles, ligaments, and tendons, and bone structures with high mineral content were excluded from the evaluation [3].

Their article reported a positive correlation between SWE values and shock wave lithotripsy (SWL) results. This correlation is likely related to the elasticity of the soft tissues surrounding the stones, as renal stones do not exhibit the elastic properties measured by SWE. Therefore, the observed correlations should be interpreted cautiously and not be considered to provide meaningful information about the stones' physical properties. Consequently, the results may have been misinterpreted due to an incorrect understanding of the technical capabilities of SWE in this context.

In conclusion, while the study by Demir et al. offers an interesting approach to assessing the success of SWL, we believe that the application of SWE in evaluating kidney stones may be fundamentally flawed due to the lack of elasticity in the stones. We think that the positive correlations observed between SWE measurements and SWL outcomes may be related to the properties of the surrounding soft tissues rather than the stones themselves. Although further research into developing alternative techniques that do not involve radiation is necessary, based on the current understanding of SWE technology, we believe that SWE may not be a suitable method for evaluating the structural properties of stones.

Sincerely,

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Data availability No datasets were generated or analysed during the

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current study.

Declarations

Compliance with ethical standarts All authors declare that they have no conflicts of interest.

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