

## Effectiveness of low-dose radiation therapy on symptoms in patients with knee osteoarthritis

We read with interest the milestone work in the *Annals of the Rheumatic Diseases* by Mahler and colleagues<sup>1</sup> on the effectiveness of low-dose radiation therapy (LDRT) on symptoms in patients with knee osteoarthritis (OA). The authors have conducted a series of studies to investigate the effects of LDRT on OA, which compensate the lack of high-level evidence in the medical literature, and inevitably forcing us to re-examine the true effectiveness of LDRT on OA in real-world clinical practice.<sup>1-3</sup> The group should be applauded for their accomplishments. In this well-designed and well-conducted randomised, double-blinded, sham-controlled trial, they found no substantial beneficial effect on symptoms and inflammatory signs of LDRT in patients with knee OA, and advise against LDRT as routine treatment. However, we have two major concerns and want to discuss them with the authors.

One point that puzzled us is the heterogeneity of the participant population. According to the inclusion and exclusion criteria, patients with Kellgren and Lawrence (K&L) scores ranging from 1 to 3 would be eligible for this trial. We completely agree with the authors about the inclusion of the relevant patient population (basically reflected a real-world population), and a more heterogeneous group of patients with OA has better external generalisability. However, the participants were not stratified by an objective covariate, such as severity of knee OA, but was stratified by a subjective covariate—Numeric Rating Scale for pain.<sup>4</sup> Therefore, the diversity of the individuals can lead to the population who response to LDRT (eg, early stage of knee OA, K&L scores 1–2) rather limited, and we suspect that stratified randomisation by K&L scores might be a better method of allocating patients.

Another aspect is the control of the potential confounding variables. Patients who reported insufficient response to analgesics were encouraged not to change the analgesic regimen, but the possible influence of analgesics could not be ruled out. Furthermore, daily physical activities including walking, standing, squatting, kneeling, climbing, carrying and lifting during the study had not been assessed or adjusted, which would also jeopardise the conclusions of the clinical trial.<sup>5</sup> Overall, LDRT is not as effective as previously thought, and further research is warranted to confirm these results, add evidence to the clinical practice and change the perception of LDRT for knee OA.

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