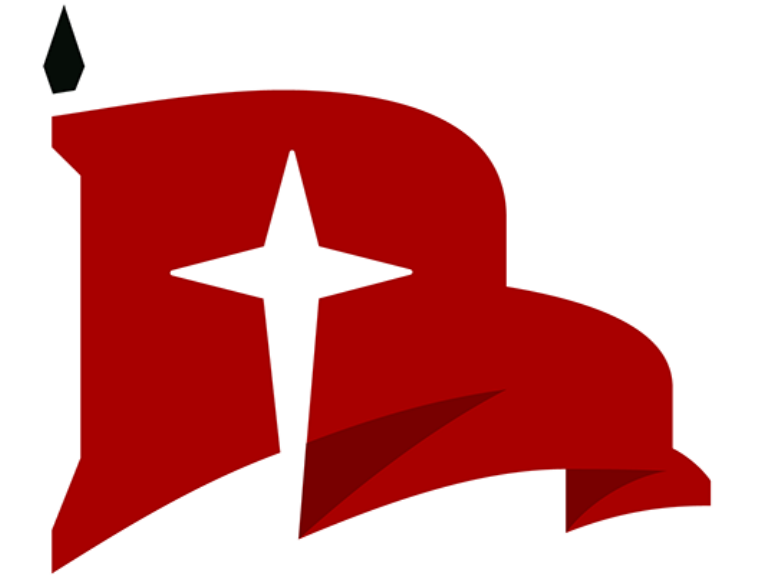


A New Horizon on Knee Osteoarthritis: A Review of Alternative Treatment Modalities



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Importance

Knee Osteoarthritis (OA) is a degenerative disease that affects more than 32 million adults in the United States and costs more than \$185 million dollars a year in treatment costs.¹ Traditional therapy of knee OA consisted of NSAIDs and corticosteroid injection therapy, but new research has emerged showing corticosteroid injections could harm knee cartilage.² In response to this, clinicians are looking for new, alternative therapies for knee OA to be able to repair and prevent knee OA.

Objective

The purpose of this review is to determine the effectiveness and utility of alternative knee osteoarthritis treatments to assess their clinical applications compared to traditional corticosteroid injection therapy and NSAIDs.

Methods

We analyzed 23 randomized control trials, systematic reviews, and meta analyses (n = 5,951) to compare the effectiveness of hyaluronic acid (HA), plasma rich protein (PRP) injections, and mesenchymal stem (MSC) cell injections. The individuals used in this study were over 18 years old, had moderate to severe knee osteoarthritis, and had failed at least 1 form of conservative treatment. We excluded all studies conducted prior to 2019. Quantitative (imaging studies and ROM testing) and qualitative results (pain and quality of life surveys) were analyzed to determine the effectiveness of treatment in these individuals.

PRP vs HA Symptomatic Improvement³

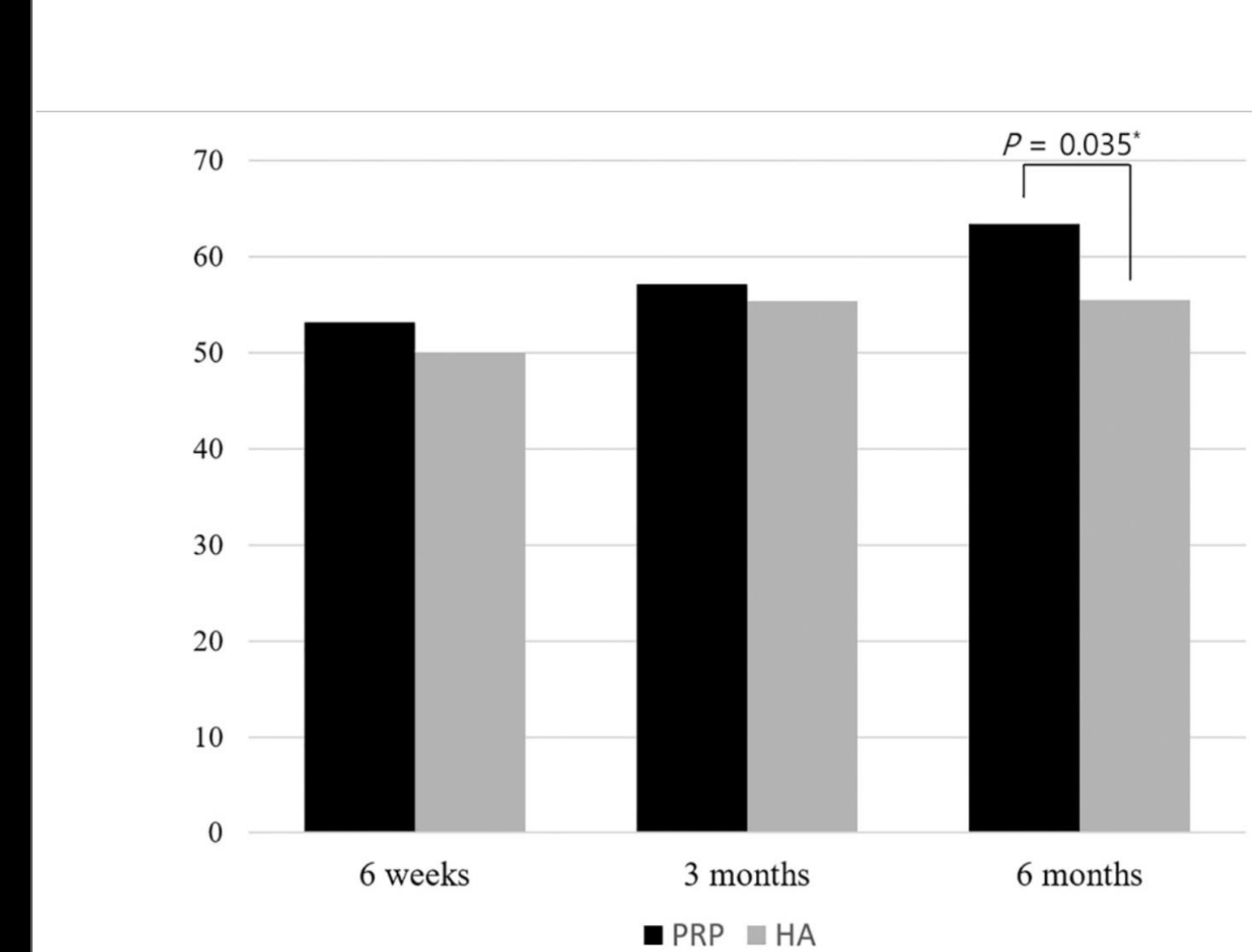
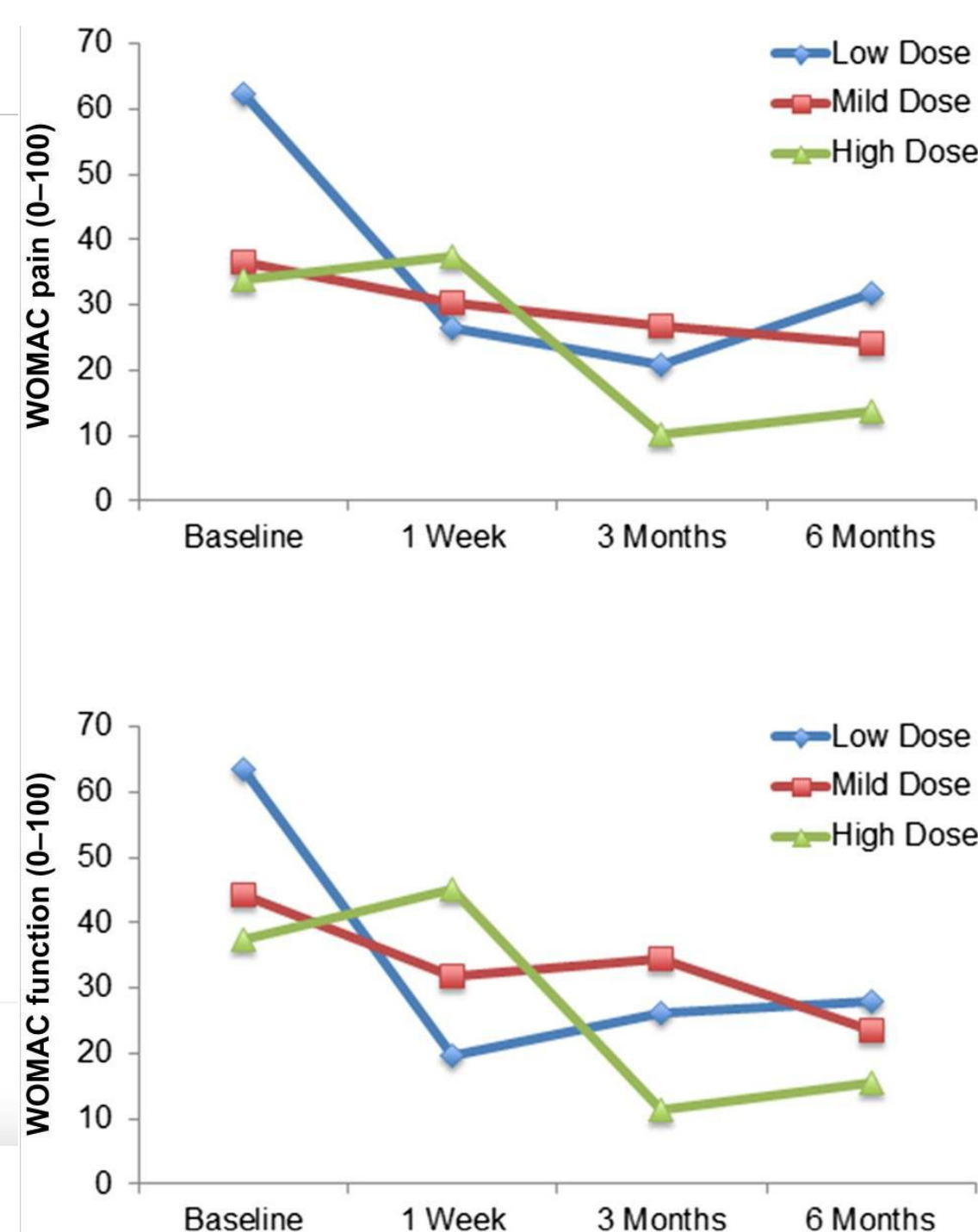


Figure 2. Patient Global Assessment scores for the PRP and HA treatment groups. The scores at 6 months were higher in the PRP group than the HA group. HA, hyaluronic acid; PRP, platelet-rich plasma.

MSC Symptomatic Improvement⁴



Discussion

Assessing the clinical utility of PRP injections, the low cost and minimally invasive approach makes them an attractive alternative for clinicians in patients with mild to moderate knee OA who have failed traditional corticosteroid therapy, either as monotherapy or used in combination with another therapy such as HA or stem cell treatments.⁵ Although it appears to have some benefit, the different formulations across brands make identifying optimal dosage and time between injections difficult, so continued research is needed.⁶ For HA, the viscosupplementation injection for a diagnosis of knee OA has been demonstrated to show no clinical significance. The efficacy of HA appears to be as effective as prescribed NSAIDs (non-steroidal anti-inflammatory drugs).⁷ The intermittent recurrent injections, on average every five to six months, have been demonstrated to provide temporary relief with mild symptoms of flares that subside after a few days post injection.⁷ Nonetheless, the most efficient effects of HA are in combination with NSAIDs, PRP, or corticosteroid injections.⁸ Despite the support from clinical trials supporting the improvement of knee OA pain from a combination of HA, CSI, NSAIDs, or PRP, the adverse effects of long-term use and cost-effectiveness assessment would be a beneficial direction for future research.⁸ With MSC's, one major concern is the cost of harvesting stem cells for treatment. A 2022 study looked at the cost-effectiveness of MSC stem cell therapy for knee OA compared to a traditional therapy of microfracture and found that MSC was cost-effective from both the perspective of the healthcare payer and the general patient population.⁹ For clinical use, however, more research is needed before this treatment can be implemented in practice due to conflicting results on whether MSC provides a clinically relevant benefit.

Conclusion

Although each method is safe and has been shown to provide benefits in certain circumstances, it is still unclear how much of a benefit these alternative treatments can provide due to the inconsistencies in formulation and timelines between treatments in the studies. More research is needed to understand the efficacy of these alternative treatments.

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