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The Use of Platelet-rich Plasma in the Treatment of Diabetic Foot Ulcers: A Scoping Review

Authors : Kiran Sharma, Viktor Kunder, Zerha Rizvi, Ricardo Soubelet

Abstract : Platelet rich plasma (PRP) has been recognized as a method of treatment in medicine since the 1980s. It primarily functions by releasing cytokines and growth factors that promote wound healing; these growth promoting factors released by PRP enact new processes such as angiogenesis, collagen deposition, and tissue formation that can change wound healing outcomes. Many studies recognize that PRP aids in chronic wound healing, which is advantageous for patients who suffer from chronic diabetic foot ulcers (DFUs). This scoping review aims to examine literature to identify the efficacy of PRP use in the healing of DFUs. Following PRISMA guidelines, we searched randomized-controlled trials involving PRP use in diabetic patients with foot ulcers using PubMed, Medline, CINAHL Complete, and Cochrane Database of Systematic Reviews. We restricted the search to articles published during 2005-2022, full texts in the English language, articles involving patients aged 19 years or older, articles that used PRP on specifically DFUs, articles that included a control group, articles on human subjects. The initial search yielded 119 articles after removing duplicates. Final analysis for relevance yielded 8 articles. In all cases except one, the PRP group showed either faster healing, more complete healing, or a larger percentage of healed participants. There were no situations in the included studies where the control group had a higher rate of healing or decreased wound size as compared to a group with isolated PRP-only use. Only one study did not show conclusive evidence that PRP caused accelerated healing in DFUs, and this study did not have an isolated PRP variable group. Application styles of PRP for treatment were shown to influence the level of healing in patients, with injected PRP appearing to achieve the best results as compared to topical PRP application. However, this was not conclusive due to the involvement of several other variables. Two studies additionally found PRP to be useful in healing refractory DFUs, and one study found that PRP use in patients with additional comorbidities was still more effective in healing DFUs than the standard control groups. The findings of this review suggest that PRP is a useful tool in reducing healing times and improving rates of complete wound healing in DFUs. There is room for further research in the application styles of PRP before conclusive statements can be made on the efficacy of injected versus topical PRP healing based on the findings in this study. The results of this review provide a baseline for further research in PRP use in diabetic patients and can be used by both physicians and public health experts to guide future treatment options for DFUs.

Keywords : diabetic foot ulcer, DFU, platelet rich plasma, PRP
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