Biological Therapies for Knee Osteoarthritis. Intraosseous Injections of Platelet Rich Plasma Improve Pain, Function and Quality of Life as Compared to Intrarticular Injections: A Controlled, Double-Blind, Randomised Clinical Trial. Preliminary Results

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Summary:
Intraosseous injections of platelet rich plasma improve pain, function and quality of life as compared to intraarticular injections, and constitute a safe alternative for the treatment of advance knee osteoarthritis.

Data:
INTRODUCTION. The increasing prevalence of knee osteoarthritis (KOAr), as well as the lack of effective treatments in moderate-severe stages, have made it the target of new biological therapies such as platelet rich plasma (PRP) and mesenchymal stem cell (MSC) research. Studies emphasise the importance of addressing the osteochondral functional unit (OFU) as a whole, as biochemical synergy and communication between the tissues is key in the pathogenesis of OA. The anti-inflammatory and immuno-modulatory effects of PRP make it a useful alternative to classic symptomatic treatments, yet intra-articular (IA) PRP injections alone appear ineffective in the later stages of KOA, as they do not target the subchondral bone. OBJECTIVE. The purpose of this study is to assess the effectiveness of intraosseous (IO) PRP injections in patients with KOA as compared to IA at 0, 3 and 6 months. Materials and methods. A controlled, double-blind, randomised clinical trial including patients with over 6 months of symptomatic KOA, Kellgren-Lawrence stages III and IV, who did not respond to NSAIDs, corticoid injections and vescusupplementation. Subjects received three IA PRP injections 1-2 weeks apart. Alongside the first infiltration, our study group was injected with IO PRP according to the PRGF-Endoret® technique while our control group was given the placebo (sodium chloride solution 0.9%). Joint pain and function were assessed via the Western Ontario and McMaster Universities Scores (WOMAC) and Knee Injury and Osteoarthritis Outcome Score (KOOS) scales at 0, 3 and 6 months after procedure. RESULTS. 84 patients were included in the study with an average age of 59.77 ± 7.54 years. 46.4% were female. 40.6% were diagnosed with bilateral KOA, 23.2% left and 36.2% right. Baseline mean WOMAC score for our study group with an average age of 59.77 ± 7.54 years. 46.4% were female. 40.6% were diagnosed with bilateral KOA, 23.2% left and 36.2% right side KOA. No statistically significant differences in patient characteristics were found between the two groups. Initial average WOMAC score for our study group was 55.03 ± 24.96 versus 53.38 ± 21.09 for our control group. Baseline mean overall KOOS score for either group was 109.11 ± 45.37 and 107.68 ± 39.19, respectively. Preliminary results show a significant improvement in pain reduction and quality of life (QoL) within both groups individually during follow-up.

Patients who received IO PRP as opposed to placebo showed greater improvement on both WOMAC and KOOS scales, yet said difference was only found to be statistically significant (p 0.007) at the 6-month but not at the 3-month follow up (p 0.143). DISCUSSION. Due to the growing prevalence of OA, it is crucial we learn more about the underlying physiopathology so we may prevent, stall or alter the course of this illness. Research has shown the importance of treating the OFU as a whole, thereby pushing biological therapies such as PRP technology to the forefront. PRP is an effective and safe alternative to classic symptomatic treatments for KOA. Our study shows that, while the benefits of IA PRP injections alone cannot be denied, their synergic action with IO PRP was key in improving pain, joint function and QoL. Administration of IO PRP should therefore be considered as a viable alternative when devising new treatment protocols for KOA.

Category: Knee - Osteoarthritis

Depleted Skeletal Muscle Mass as Indicated By the Sarcopenia Index Correlates With Decreased ADL In Patients With Advanced Knee Osteoarthritis

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Summary:
In advanced knee osteoarthritis patients, decreased skeletal muscle mass assessed by the sarcopenia index (serum creatinine/cystatin C ratio) was significantly associated with ADL decline.

Data:
[Objective] In Japan, a super-aging society, the number of patients with knee osteoarthritis (KOAr) is expected to increase in the future. The elderly may be implicated by sarcopenia, an age-related loss of muscle mass, but its measurement is not simplified. Recently, it has been reported that the serum creatinine/cystatin C ratio (sarcopenia index: SI) correlates with skeletal muscle mass, and SI divided by body weight (SI/BW) is considered more accurate. In this study, we used SI/BW to examine the characteristics of skeletal muscle mass loss in patients with advanced KOA. [Methods] Retrospective, single center study was conducted. A total of 68 consecutive advanced KOA patients who underwent total/unicompartmental knee arthroplasty from April 2020 to June 2021 were recruited. To avoid the influence of renal function or other conditions that cause muscle atrophy, exclusion criteria included estimated glomerular filtration rate < 30, inflammatory disease, and general anaesthesia surgery for other disease within a year. After application of exclusion criteria, 45 patients, 45 knees were included. Age, gender, Body Mass Index, Visual Analogue Scale, joint range of motion, SI/BW and patient-reported outcome scores (PROs) such as Knee Society Score (KSS), Knee Injury and Osteoarthritis Outcome Score (KOOS) and Oxford Knee Score (OKS). Cut-off values of SI/BW were defined as 0.0145 (men) and 0.009 (women) respectively according to the previous report, and we defined patients' group with SI/BW less than the cut-off value as SI+ and the others as SI-. We evaluated the percentage and characteristics of SI+. We also evaluated the association between SI/BW and PROs. [Results] The overall percentage of SI+ was 20.0%, while SI+ was significantly higher in males (57.1%) compared to females (3.2%) (p < 0.001). There was no significant difference in patient background other than sex between SI+ and SI-. The association between SI/BW and each PRO was statistically analyzed using multiple regression analysis. There was no multicollinearity in the independent variables with variance inflation factor of 1.14 (age), 1.43 (BMI), 1.02 (sex), 1.38 (SI/BW) respectively. Among each PRO subscales, KSS functional activity score (ß: 0.34, 95%CI: 0.024 to 0.65, p-value 0.036), KOOS ADL (ß: 0.57, 95%CI: 0.28 to 0.86, p-value 0.00032), and OKS (ß: 0.45, 95%CI: 0.13 to 0.77, p-value 0.0075) were significantly associated with SI/BW. [Discussion] This study revealed that 20% of patients with advanced-stage KOA have decreased skeletal muscle mass, and the percentage was higher in males. Decreased skeletal muscle mass was significantly correlated with lower activity-related scores such as KSS Functional activity, KOOS ADL and OKS. Rehabilitation interventions have been reported to improve clinical outcomes for KOA patients, and selective intervention for patients with reduced SI/BW can be aimed at improving efficiency. In addition, preoperative evaluation is important because TKA in patients with Sarcopenia is reported to...