

318

Efficacy of Specific Bioactive Collagen Peptides in the Treatment of Joint Pain

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Purpose: In several clinical trials, bioactive collagen peptide (BCP) supplementation has demonstrated a positive effect on pain and mobility in osteoarthritic patients. This effect was explained by the excellent bioavailability of the peptides and their stimulatory impact on extracellular matrix synthesis. So far, however, there is a lack of clinical data on the role of BCP in a secondary preventive approach.

For this reason, two prospective, randomized, placebo-controlled multicenter phase III studies were carried out to evaluate the efficacy of BCP intake on activity-related or functional joint pain in subjects not diagnosed with any joint diseases.

Methods: The first study included 160 athletes (mean age 24) of both genders with activity-related knee pain (>20mm VAS). Over the study period of 12 weeks, participants ingested 5g of BCP (FORTIGEL® GELITA AG, Germany) per day or placebo. As primary outcome variables, changes in pain intensity during activity were defined, as assessed by the study participants and the attending physicians using a visual analogue scale (0–100 mm VAS). In addition, changes in “pain at rest, changes in knee joint mobility, and the use of additional treatments (physiotherapy, ice packs, etc.) were considered as secondary end-points.

In the second study, 182 men and women with a mean age of 50 suffering from functional knee or hip pain (> 3 NRS) participated. Primary endpoints of the study on elderly subjects were changes in joint pain during walking and pain at rest, assessed by the physicians on a 1–10 numeric rating scale (NRS). As the secondary end-point of the study, “pain after standardized physical stress” was assessed by the attending physicians, and several questions addressing joint discomfort and joint stiffness were evaluated by the participants using the NRS.

Both trials were conducted in accordance with the ethics principles of the Declaration of Helsinki and were approved by local research ethics committees.

Results: In both studies, a statistically significant ($p < 0.05$) improvement for all primary endpoints could be demonstrated after BCP treatment compared with placebo and, in both studies, the efficacy of BCP treatment was confirmed for the ITT and PP population.

In the athlete study, activity-related knee pain was statistically significantly reduced by 37.5% (participants' assessment) and 33.8% (physicians' assessment) although, as expected, a pronounced placebo effect of about 25% pain improvement was determined. The secondary end-points of this trial confirmed the positive effect of BCP treatment in principle, even if not every result reached the level of statistical significance.

In the trial with subjects suffering from functional knee and hip-joint pain, the data evaluation for the primary end-points of the study “pain during walking” and “pain at rest” showed an improvement of 38% for activity-related pain, and 39% for “pain at rest” after a 5g BCP treatment over 12 weeks. Although a pronounced placebo effect could be determined (25.6% improvement for pain during activity, and 18.6% for “pain at rest”), the BCP intake was statistically and significantly ($p < 0.05$) more effective for both primary end-points when a group comparison with placebo was carried out. For “pain during walking”, an effect size of $d = 0.841$ was calculated compared with the baseline situation, and for “pain at rest”, a value of $d = 0.628$ was determined.

A detailed analysis of the secondary end-point of the study revealed that, for 12 of the 15 tested parameters, the improvement in joint pain, joint stiffness, and movement restriction was more pronounced after a BCP intake compared to placebo. Particularly for “pain after standardized physical stress”, “pain and movement restriction when crouching down” and “pain when walking”, a statistically significant improvement ($p < 0.05$) after a 12-week BCP supplementation was determined compared to placebo.

Conclusions: In conclusion, both RCTs clearly demonstrate the efficacy of a daily intake of 5 g of specific bioactive collagen peptides on pain reduction in subjects suffering from in activity-related or functional joint discomfort. The data suggest that a BCP treatment over a longer period of time is effective in individuals putting their joints under stress, or individuals with a certain risk of developing a degenerative joint disease in the foreseeable future. Therefore, a BCP

supplementation might be an interesting option as a secondary preventive approach for the treatment of functional joint pain.

319

Correlates of Hyaluronic Acid and Corticosteroid Injections Among Patients With Radiographically Confirmed Osteoarthritis

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Purpose: Intra-articular injections such as hyaluronate and corticosteroid injections are increasingly used in persons with osteoarthritis (OA). Despite the rapid proliferation of these treatments and clinical guidelines regarding their use, information on the characteristics of people receiving them is scarce. We sought to describe use of injections among adults with radiographically confirmed knee OA and to identify correlates of injection use.

Methods: We used publicly available Osteoarthritis Initiative data and included participants with at least one radiographically confirmed knee OA (Kellgren-Lawrence grade (K-L) ≥ 2) at baseline. Participants who did not report corticosteroid (CO) or hyaluronic acid (HA) injections at baseline with available follow-up data were included in the final sample ($n = 2,256$). We identified 415 participants who reported they had received hyaluronic and/or corticosteroid injections during the 6 month before the annual follow-up assessments and matched them to 1,841 non-injection users by randomly selecting a study visit to match the distribution observed in the injection users. Multinomial logistic regression models were built to identify correlates of injection use including sociodemographics and clinical/functional factors. We estimated adjusted odds ratios (aOR) and 95% confidence intervals (CI) for each group compared with a common reference group (non-injection users) after adjusting for sociodemographics, clinical/functional factors, and medication use.

Results: In the study sample, 16.9% reported injections on the year 1 visit, 13.7% in year 2, 16.6% in year 3, 13.5% in year 4, 15.9% in year 5, 13.5% in year 6 and 9.9% in year 7. Of the 18.4% reporting injection use during the follow-up period, 68.4% was CO, 21.2% HA and 10.4% reported both. HA and CO were more commonly reported by those with higher income (e.g. aOR_{HA} $> \$50k$ versus $< \$25k$: 3.63; (95% CI: 1.20–10.99)) and less common among blacks (aOR_{HA}: 0.19; 95% CI: 0.06–0.55). Injection use was commonly preceded by NSAIDs use one-year before (HA: 47.1%, CO: 40.8%, both: 58.1%, neither: 26.0%). Use of chondroitin sulfate was associated with report of HA alone (aOR: 2.36; 95% CI: 1.46–3.81) or in combination with CO (aOR: 2.67; 95% CI: 1.32–5.41). Greater K-L grade (grade 4 versus 2) was associated with increased odds of HA (aOR: 4.79; 95% CI: 2.47–9.30), CO (aOR: 1.56; 95% CI: 1.04–2.34), or both (aOR: 4.94; 95% CI: 1.99–12.27). History of knee injury was correlated of receipt of both (aOR: 2.32; 95% CI: 1.11–4.84), but not with use of either type alone.

Conclusions: Among individuals with radiographically confirmed OA, report of hyaluronic acid or corticosteroid injections is associated with higher socioeconomic positioning and indicators of greater disease severity. Given the costs associated with the injection use, understanding the beneficial effect of these treatments on symptom relief or slowing disease progression in “real-world” contexts is important and remains to be confirmed.

320

In a Two-Year Double-Blind Randomized Controlled Multicenter Study, Chondroitin Sulfate Was Significantly Superior to Celecoxib at Reducing Cartilage Loss With Similar Efficacy at Reducing Disease Symptoms in Knee Osteoarthritis Patients

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