



Are intra-articular injections in the treatment of knee osteoarthritis effective enough?

O. Şahap Atik, MD¹ , Laszlo Rudolf Hangody, MD, PhD² 

¹President, Turkish Joint Diseases Foundation, Ankara, Türkiye

²Department of Orthopedics and Trauma, Uzsoki Hospital, Budapest, Hungary

The use of intra-articular injections (IAs) in the treatment of osteoarthritis (OA) has gained wide popularity in recent years. The relatively low cost, rapid and simple method of pain relief are its main advantages.^[1] However, most articles have reported insufficient sample size with a varying follow-up period which results in difficulty in formulating and implementing clinical recommendations.

Seventy-nine randomized controlled trials (RCTs) with 8,761 patients were included in a meta-analysis.^[2] Intra-articular injections evaluated included autologous conditioned serum (ACS), bone marrow aspirate concentrate (BMAC), botulinum toxin, corticosteroids (CSs), hyaluronic acid (HA), mesenchymal stem cells (MSCs), ozone, saline placebo, platelet-rich plasma (PRP), plasma rich in growth factor (PRGF), and stromal vascular fraction (SVF). The authors concluded that current evidence indicated that SVF injections resulted in the greatest improvement in pain and functional

outcomes in patients with knee OA at up to one-year follow-up.

Osteochondral lesions are frequently observed and caused by an acute or repetitive traumatic event. The damage of articular cartilage can cause pain, effusion, OA, and joint dysfunction.^[3] A study evaluated the effect of adipose-derived SVF on osteochondral defects treated by a combination of microfractures (MFs) and HA-based scaffold in a rabbit model.^[3] The authors concluded that it could be used to accelerate cartilage regeneration, thus, in the treatment of secondary OS.

A total of 43 trials involving 5,554 patients were included in another meta-analysis.^[4] The authors reported that IA injections of HA or CS were associated with better outcomes than PRP, adipose MSC or placebo in knee OA. Single PRP, multiple PRP, and adipose MSC interventions did not result in a relevant reduction of joint pain nor improvement of joint function compared to placebo. For pain relief and adverse effects, steroids are most likely the most optimal treatment followed by HA.

There is overwhelming information about PRP, BMAC, and MSC, but there are less evidence-based support than media promotions and highlights currently. Low-dose IA steroids for synovitis and high-molecular weight HA injections for dry osteoarthritic knees have more reliable literature support than new orthobiologics.^[5]

In an editorial, Bannuru^[6] commented that *“Intra-articular corticosteroids are useful for acute and short-term pain relief, whereas hyaluronic acid is useful for a longer-term treatment effect for patients with knee osteoarthritis. More rigorous research using homogeneous preparations and techniques and randomizing larger numbers of knee osteoarthritis patients are warranted before*

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Correspondence: O. Şahap Atik, MD, Turkish Joint Diseases Foundation, Mustafa Kemal Mah., Dumlupınar Bul., 274/2, C2 Blok, Ofis 5, 06900 Çankaya, Ankara, Türkiye.

E-mail: satikmd@gmail.com

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recommending any wider acceptance of platelet-rich plasma and stem cell therapies. This is of utmost importance, especially with several new injectables such as anti-nerve growth factor antibodies, Wnt pathway inhibitors, and capsaicin showing promise to enter the market soon."

Current clinical experience on orthobiologics should be regarded as the first steps for the new concept of musculoskeletal system healing and is still in experimental stage. No definitive conclusions can be established about the effects of PRP in such conditions, since most studies are of low-to-moderate methodological quality and use variable PRP protocols.^[7]

In conclusion, the true extent of the benefits of IA injections is still being debated. Intra-articular CSs should not be administered frequently. Biological agents including MSC, BMAC, and PRP may have a great potential, but unrestricted utilization cannot be recommended, as high-quality scientific evidence is still lacking in the modern literature.

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