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Comparison of Platelet-Rich Plasma Injections and Hyaluronic Acid Injections in the Treatment of Knee Osteoarthritis

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Abstract

Osteoarthritis is one of the most common diseases that people can suffer from in today’s society. This degenerative disease can affect any of the body’s joints, but is most common in the knees, hands and spine. This review studied the effects of two specific treatments for knee osteoarthritis: platelet-rich plasma injections and hyaluronic acid injections. Both of these treatments can be provided by a primary care provider that has the proper training as well as an orthopedic specialist. Platelet-rich plasma injections (PRP) are the patient’s own blood products reintroduced into the affected joint to stimulate healing. Hyaluronic acid (HA) occurs naturally in the body, and when injected into a joint suffering from osteoarthritis, it can act as a joint lubricator/shock absorber to help decrease pain and improve function. The results of this study show that both platelet-rich plasma and hyaluronic acid injections can be effective in the treatment of knee osteoarthritis. However, platelet-rich plasma was shown to be more effective in reducing pain, increasing range of motion, and improving overall function.

Introduction

Osteoarthritis is a degenerative condition that can affect any joint in the human body. The chondral cartilage lines the ends of the bones so that when the joint is moved, the bones do not wear down on each other. When a patient begins to experience arthritis, this chondral cartilage wears down and the bones begin to grind on one another. This condition advances with age and overuse of the joints. The most common joints affected are the knees and hands due to their amount of use over a person’s lifespan. OA can affect many other joints as well that include the spine, hips, and shoulders. Risk factors that can increase a person’s risk of developing OA include obesity, sex (women are more prone to OA), increased joint use, and previous joint injuries. PRP injections and HA injections were compared in this study with regards to their effectiveness at treating OA.

Statement of the Problem

Osteoarthritis is one of the most common diseases diagnosed in the United States. It can be debilitating and painful due to the symptoms that patients experience. Patients are always looking for safe, effective, and affordable treatments to alleviate their pain. By using these treatments, they are looking to delay the eventual surgical intervention that may be required.

Research Question

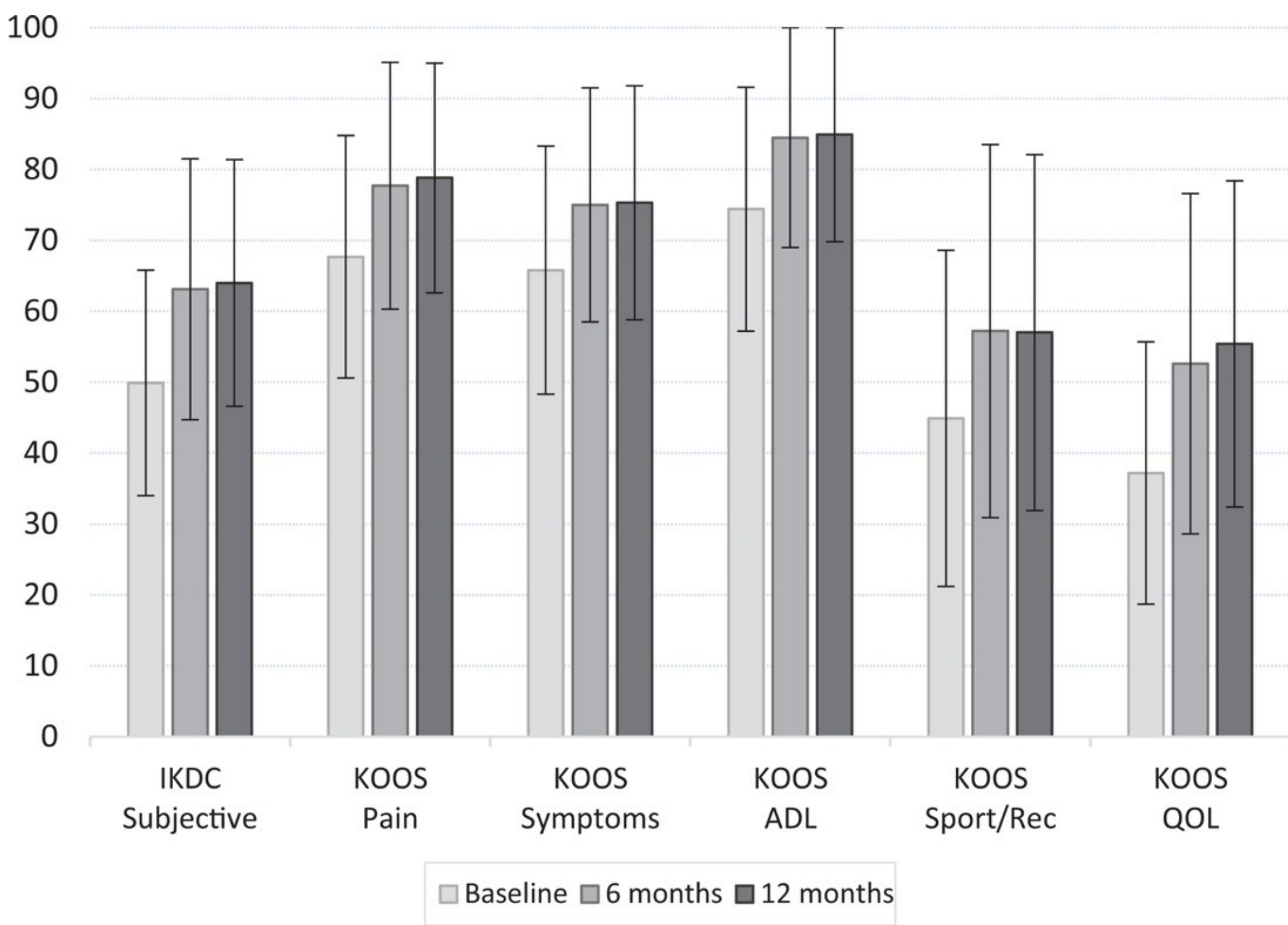
In patients with knee osteoarthritis, do platelet-rich plasma or hyaluronic acid injections have better pain reduction and delay joint replacement surgery?

Literature Review

Treatment of Osteoarthritis using Platelet-Rich Plasma Injections

Research of the literature on PRP injections for knee OA showed:

- PRP injections were effective in reducing pain/stiffness in patients with knee OA.
- Altamura et al. showed that the patients’ pain and function scores both improved with use of PRP injections using the International Knee Documentation Committee scale (see graph below).



Treatment of Osteoarthritis using Hyaluronic Acid Injections

Studies analyzing the effect of HA injections on knee OA showed:

- Petterson and Plancher (2019) study showed that HA injections “are a safe and effective treatment for providing clinically meaningful reduction in knee pain in 2 weeks”.
- Many of the studies reviewed found it difficult to quantify a reduction in pain when using HA injections due to pain being subjective, but they found that treatment was most effective when using analgesics as well as injections.

Treatment of Osteoarthritis using a Combination Injection (PRP and HA)

- Abate et al. study showed that using a combination injection was more effective than using just PRP alone in treating knee OA.
- Combination were mostly reserved for cases of severe osteoarthritis.

Platelet-Rich Plasma Injections vs. Hyaluronic Acid Injections in Treating Knee Osteoarthritis

- Raeissadat et al. proved that in long term treatment of osteoarthritis, patients that received PRP injections had better outcomes when it came to pain reduction, range of motion, and joint stiffness reduction.
- Park et al. showed that PRP injections are more effective in the treatment of OA when compared to HA injections. However, their study still showed that HA injections were a valuable treatment in patients with knee OA.

Discussion

- Numerous studies have compared the effect of PRP and HA injections for knee osteoarthritis. While many of the study results show that PRP injections are more effective than hyaluronic acid injections, most agree that either of these treatments can help reduce the symptoms of pain, stiffness, and limited range of motion in joints with OA.
- Both PRP injections and HA injections can help delay the need for surgical intervention, such as a total knee replacement.
- For many patients, the goal of treatment is to reduce their symptoms, but ultimately, delay surgery for as long as possible.
- Many patients will eventually progress to the point where they need surgical intervention, but only as a last resort when conservative treatments are no longer effective.
- In most of the studies that were analyzed, it was shown that PRP injections were more effective at reducing symptoms, reducing NSAID use (Abate et al., 2015), and delaying surgical intervention compared to HA injections.



<https://news.utexas.edu/2023/09/24/ai-tech-accurately-diagnoses-knee-arthritis-from-medical-images/>

Applicability to Clinical Practice

Research has shown that the use of PRP injections and HA injections are both effective in the treatment of OA. This research can help primary care providers make educated treatment decisions with their patients. Knowing this information may help streamline the referral process with orthopedics.

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