Platelet-Rich Plasma Therapy in the Clinical Setting

Kaleb Kantner* ATS; Robb Duncanson^ M Ed, ATC, LAT, CSCS; Shawn Felton* EdD, ATC, LAT
*Florida Gulf Coast University, College of Health Professions and Social Work and
^University of Tennessee Sports Medicine

Introduction

Platelet-Rich Plasma therapy utilizes an individuals own blood plasma and the platelets it contains in order to assist and advance the body's healing process. Blood is drawn from an individual, centrifuged to elicit only platelet-rich plasma proteins and then injected into the site of injury. The platelet-rich plasma restarts the body's inflammatory process to bring an influx of healing components of the cellular level to repair damaged tissue. Rehabilitation protocols can very from 6 weeks to 4 months. The following case study will discuss its effectiveness in a football athlete that was injected with PRP for bilateral patellar tendinitis.

Purpose

The purpose of this case review is to demonstrate the effectiveness of platelet-rich plasma therapy:

- Initial phase- resting and allowing the inflammatory process to run for one week
- Second phase- restoring full range of motion two weeks post-injection
- Third phase- regaining strength and mobility within 8 weeks post injection
- Fourth phase- proprioceptive and plyometric stage; 8 weeks post injection
- Final phase- return to play drills and exercises; 10 weeks post injection

Background

- 18 year old male
- Division I Football Athlete
- Freshman Wide Receiver
- 180 cm and 80.74 kg
- Chronic bilateral patellar tendinitis 2 years ago.
- Physical Therapy was ineffective
- 1 previous round of PRP injections- limited results

Rehabilitation

Athlete began this rehabilitation program after each PRP injection:

0-3 days: Immobilization of knee, pain control through modalities, partial weight bearing with crutches.

Week 1: Rest and restoring range of motion (ROM) while maintaining hip and quad strength. Active ROM and Passive ROM

Week 2-4: Restoring full range of motion while maintaining quad, hip and calf strength. Weight bearing as tolerated. Rehabilitation exercises 3 times a day for 30 minute sessions, 6 days a week

Week 4-6: Full ROM with resistive strengthening exercises. Closed kinetic chain exercises. Maintain hip strengthening and calf strengthening exercises while incorporating progressive quad and hamstring strengthening exercises 3 times a day for 30 minutes, 6 days a week.

Week 6-8: Full ROM with increased progression in hip strengthening, calf strengthening and quad and hamstring strengthening exercises. 3 times a day for 30 minute sessions 5 days a week.

Week 8-10: Full ROM with increased resistance and progression in hip, calf, quad and hamstring strengthening exercises. Open Kinetic chain exercises. Agility and plyometric exercises week 9.Increased intensity. 3 times a day 30 minute sessions 5 times a week.

Week 10-12: Full ROM, full body weight resistance exercises, increased resistance and progression in lower extremity exercises. Sport specific drills incorporated. Plyometric and agility exercises intensity increased.

Treatment

- This athlete was not allowed to have any ice or non-steroidal anti-inflammatory drugs for two weeks post injection due to the inhibition of the inflammatory process
- This athlete would daily receive premodulated electric stimulated treatments on both knees with heat before rehabilitation began to assist in pain gate control as well as adding components that would increase vascular supply to the area of injury to promote healing.
- Lower extremity stretching three times a day was a vital part of rehab once range of motion was restored. Static stretching of the hamstrings, quadriceps, calf, gluts and groin muscles were conducted and held for 20 seconds at a time.

Additional Facts

During the first two weeks of rehabilitation this athlete was unable to take NSAIDs or use ice because it would inhibit the inflammatory process that was being achieved through PRP injection. Platelet-rich plasma can differ in each individual in the content of cellular healing components in the plasma.

Conclusion

The platelet-rich plasma therapy used to facilitate healing with bilateral patellar tendinitis in this collegiate athlete provided limited to no effect in this case study. Approximately 3 months of rehabilitation was conducted according to the physician's protocol. Bilateral patellar tendinitis pain was still present after 3 months of rehabilitation. PRP injections for this case study deemed ineffective, However, PRP injections have provided relief for many other case studies researched. In conclusion, PRP injections are a fairly new form of medicine. Consistency and credibility can not yet be determined. Further research and studies need to be conducted to refine and re-evaluate a better method of procedure for platelet-rich plasma therapy to elicit only healing components within the plasma.