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EDITORIAL

Do patients benefit from platelet-rich plasma?

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Orthobiologics are biologically derived materials which aim to promote regeneration of tissues that are the focus of orthopedic surgery.[1] Platelet-rich plasma (PRP) is derived from patients' complete blood and then centrifuged with various techniques to acquire growth factors such as platelet-derived growth factor, transforming growth factor-β1, epidermal growth factor, fibroblast growth factor, and others.

Patellar tendon seems to benefit from PRP injections, while there is no proven benefit for Achilles tendon, rotator cuff pathology, or lateral elbow tendinopathy.[2]

Platelet-rich plasma could be a promising bioactive scaffold for the delivery of chondroprogenitors in cartilage healing due to its synergistic effect in supporting cell proliferation, maintaining cell viability, and favoring extracellular matrix production.[3]

The addition of PRP to a poly lactic-co-glycolic acid (PLGA) scaffold with continuous passive motion in osteochondral defects may be beneficial for hyaline cartilage and subchondral bone tissue repair. However, PRP alone (with or without PLGA implants) is limited to osteochondral defect repair without significant regeneration.[4]

A synergistic effect of hyperbaric oxygen (HBO) and PRP on knee cartilage may result in better regeneration.[5] Although the details are not well understood, the aggregation and activation of growth factors released from platelets whose activation is increased in the hyperbaric environment may explain this synergistic effect. This may result in better regeneration than the effect of PRP or HBO alone.

The possible effects of leukocyte concentration in the content of PRP and the administration of PRP using a drug delivery system on chondrocyte proliferation are searched *in vitro* conditions. Authors showed that leukocyte-rich PRP administered with a delivery system such as hydrogel is more efficient than conventional applications of PRP in the treatment of cartilage damage *in vitro*.[6]

However, the results of another study indicate that leukocyte-poor PRP may promote tendon healing through anabolic effects while leukocyte-rich PRP may impair the repair process.[7]

Current clinical experience on orthobiologics should be regarded as first steps for the new concept of musculoskeletal system healing and is still in experimental stage.[1] 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. For these reasons, there is a growing debate regarding PRP's clinical efficacy.[8]

In conclusion, PRP is being marketed as a promising new product of regenerative medicine

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that is superior to other current therapies. However, unfortunately, it still lacks robust evidence to support its use in clinical practice. Orthopedic surgeons should be aware of the ongoing uncertainty about the evidence behind PRP therapies and inform patients about this fact.

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