

Platelet-rich plasma protects rotator cuff-derived cells from the deleterious effects of triamcinolone acetonide.

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Abstract

Triamcinolone acetonide (TA) injections are widely used to treat enthesopathy, but they may induce adverse effects such as tendon impairment and rupture. Platelet-rich plasma (PRP) is a blood fraction containing high platelet concentrations and various growth factors that play a role in tissue repair processes. The purpose of this study is to investigate whether TA has deleterious effects on human rotator cuff-derived cells, and if PRP can protect these cells from the effects of TA. Human rotator cuff-derived cells were cultured with and without TA and PRP, and the culture without any additive served as the control. Cell morphology was assessed at days 7 and 21. Cell viability was evaluated at days 1, 7, 14, and 21 by a water-soluble tetrazolium salt assay. Induction of apoptosis was measured by immunofluorescence staining and flow cytometry at day 7. Induction of cleaved caspase-3 was measured by immunofluorescence staining at day 7. The cells cultured with TA had a flattened and polygonal shape at day 7. The cells cultured with both TA and PRP were similar in appearance to control cells. Exposure to TA also significantly decreased cell viability, but cell viability did not decrease when PRP was added along with TA. The number of apoptotic cells increased with TA exposure, while addition of PRP prevented cell apoptosis. In conclusion, the deleterious effect of TA was prevented by PRP, which can be used as a protective agent for patients receiving local TA injections. © 2012 Orthopaedic Research Society. Published by Wiley Periodicals, Inc. J Orthop Res.