Effect of Polydeoxyribonucleotide on Tendon Healing and Fatty Degeneration in Arthroscopic Rotator Cuff Repair

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INTRODUCTION:
Polydeoxyribonucleotide (PDRN) has been recently used as a tissue regeneration activator. This study was performed to explore the effects of PDRN on tendon healing and reversal of fatty degeneration in arthroscopic rotator cuff repair.
METHODS:
Sixty patients with rotator cuff tears who had undergone arthroscopic rotator cuff repair were enrolled in this single center, double-blinded randomized controlled trial study. Thirty patients were randomly allocated to group 1 and received PDRN injection to the repair site during the surgery. The other 30 patients were allocated to group 2 and underwent saline injection. In out-patient department, all the patients in the two groups were injected with the same materials to the repair site under ultrasound guidance at 2 weeks after surgery. The visual analog scale (VAS) for pain, American Shoulder and Elbow Surgeon's score (ASES), Constant score, range of motion and muscle power were checked at preoperatively and until postoperative 1 year. Follow-up MRI was checked at postoperative 6 month. The mean plasma levels of vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF), and insulin-like growth factor (IGF) were checked until postoperative 6 months.
RESULTS:
In the two groups, the overall functional outcomes improved after surgery. Group 1 showed a significant decreased VAS score at 16 weeks after surgery compared with that in groups 2 (P=0.014). And group 1 showed a significant decreased fatty degeneration of supraspinatus and infraspinatus on follow-up MRI at 6 months after surgery (P=0.028 and P=0.030). On the follow-up MRI, group 2 showed higher retear rate than group 1, but this difference did not reach a statistical significance (G1 : G2 = 4 : 8, P=0.200). Group 1 showed a significantly higher mean plasma FGF level postoperative 1 hour and 6 weeks than group 2 (15.5>11.1; P=0.008, 7.9>6.0; P=0.001).
DISCUSSION AND CONCLUSION:
PDRN may have the possibility to improve tendon healing and decrease fatty degeneration after arthroscopic repair of rotator cuff tear associated with growth factor.