The Influence of Atorvastatin on Tendon Healing: An Experimental Study on Rabbits

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abstract

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Hyperlipidemia is a major risk factor for coronary heart disease. The most commonly used antihyperlipidemic drugs are 3-hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase inhibitors (statins), of which atorvastatin is one of the most widely used. Little is known about the relationship between tendinopathy and HMG CoA reductase inhibitors (statins) or the effects of atorvastatin use on tendon healing following surgical repair of tendon rupture. We hypothesized that atorvastatin negatively affects this healing process.

The Achilles tendons of 16 New Zealand rabbits were ruptured surgically and repaired with sutures. Eight of the rabbits were given oral atorvastatin. The other 8 served as a surgical control group. Six weeks postoperatively, all the rabbits were sacrificed, and the repaired tendons were removed. After standard histological preparation, fibroblastic activity, revascularization, collagenization, collagen construction, and inflammatory-cell infiltration were evaluated. On comparing the atorvastatin and surgical control groups, we observed no difference in fibroblastic activity. Although it did not reach statistical significance in our study, a difference was noted in revascularization, collagenization, and inflammatory cell infiltration; and a statistical difference was observed in collagen construction.

Doubt remains about the adverse effect of atorvastatin use during tendon healing. Further investigations in animal and human models are needed on the effects of tendon healing when atorvastatin is administered for a longer time frame prior to the injury.

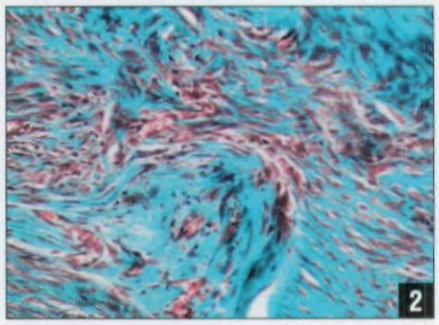

Figure 1: Histological tendon sections from the surgical control group (×200) (hematoxylin-eosin and Masson's trichrome). **Figure 2:** Histological tendon sections from the atorvastatin group (×200) (hematoxylin-eosin and Masson's trichrome).

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Drs Esenkaya, Sakarya, Unay, Elmali, and Aydin have no relevant financial relationships to disclose.

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