Short communication

Influence of fluvastatin on bone formation induced by demineralized bone matrix in mice

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Abstract:
In the last decade, statins became widely used drugs in hypercholesterolemia treatment. Several studies have demonstrated that statins may also be successfully administered in the treatment of osteoporosis. There are, however, no reports regarding the effect of statins on heterotopic ossification (HO). In this paper, we examined the influence of fluvastatin on heterotopically induced bone formation in mice. HO was induced by implantation of rat-derived demineralized bone matrix (DBM) into intramuscular pockets in CFW mice. Mice in the experimental groups received fluvastatin at 3.6 mg/kg per day for 25 consecutive days whilst mice in the control group received placebo. Twenty five days after DBM implantation blood samples were collected to measure total serum cholesterol (TC), triglycerides (TG), low density lipoprotein cholesterol (LDL-C) and alkaline phosphatase (AP) activity. Mass of mineral deposited in the induced ossicle was established after hydrolysis of soft tissues surrounding the induced ossicles. In fluvastatin-treated mice, the mass of mineral deposited in heterotopically induced ossicles and AP serum concentration were significantly increased while TG and TC concentrations were decreased, when compared to mice receiving placebo. These results show that administration of statins, in some instances, may affect heterotopic ossification and that during hypocholesterolemic treatment of patients with predisposition to HO, following hip arthroplasty, such treatment may increase risk of HO.

Key words:
demineralized bone matrix, fluvastatin, heterotopic bone formation, mice, statins