



P11. OSTEOPOROSIS. FAILURE OF STEROID BIOSYNTHESIS. STRESS FRACTURES.

Dzuga S (US) [1]

Osteoporosis related fractures pose a significant economic and healthcare problem.

Hypercholesterolemia and osteoporosis are highly prevalent conditions for aging patients. The 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitors (or statins) are frequently used for the treatment of hypercholesterolemia. In recent years there has been high interest in the use of statins for osteoporosis due to the possible effect on bone tissue. Bisphosphonates are currently used for treatment of osteoporosis. Recent studies have shown an association between long-term use of these drugs and atraumatic or low-energy atypical femoral fractures. Stress fracture was originally described by Breithaupt in 1855. Damage to the bone occurs as the result of the imbalance between osteoblast and osteoclast. Bisphosphonates decrease bone resorption via inhibition of the farnesyl diphosphate synthase in mevalonic acid pathway. Statins affect the same pathway only at an earlier stage. Statins inhibit HMG-CoA reductase, preventing synthesis of mevalonate but also of isoprenoids, which affect osteoclast activity. Bisphosphonates have similar effect on osteoclasts. Statins and bisphosphonates have a major impact on cholesterol biosynthesis pathway.

In this presentation we present our point of view on low-energy (stress) fracture that was associated with a long term statin and bisphosphonate therapy. A 65-year-old woman was presented with a stress fracture of the left femur. Based on our review of literature to date there are no reports available on combined effect of statins and bisphosphonates on risk of stress fractures.

We believe that the concurrent use of statins and bisphosphonates should be carefully studied because of a possible negative cumulative effect of these drugs on cholesterol biosynthesis, steroidogenesis, and bone homeostasis, which could lead to an increased risk of low-energy (stress) fractures. Unfortunately, current very limited evidence is not conclusive and further research is necessary.

[1] Institute of Restorative Medicine