Case Report

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Electrotransference of the mouse growth hormone gene associated with the administration of mesenchymal stem cells, in a murine model of osteogenesis imperfect

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Abstract

Osteogenesis imperfecta (OI) is an inherited connective tissue sickness characterized via fragility, deformity and low bone density, as well as by other scientific manifestations. Type I OI is the mildest and most commonplace form of the disease, caused by mutation inside the COL1A1 gene, resulting within the production of handiest ~50% of everyday collagen. The corresponding animal model is the oim mouse, supplying a phenotype very just like human kind I OI. We intention, for the first time, at comparing the electrotransference of mouse increase hormone (mGH) gene, encoding a protein that already confirmed therapeutic effects, collectively with the administration of murine mesenchymal stem cells (MSCs), for enhancing heterozygous oim mice phenotype. We already prepared and evaluated populations of MSCs (bone marrow and adipose tissue) that emit purple fluorescence. These are administrated in one-of-a-kind quantities and thru three routes (intravenously, intraperitoneally or locally into the femoral condyles) using the in vivo imaging machine and histological sections of femur, liver and kidneys, a methodology we currently set up and tailored to our precise situations. Then, we will administer the most green MSCs population blended with mGH gene electrotransfer. In this bioassay, we're equipped to examine exclusive parameters: frame weight, total frame, tail and femur period, bone mineral density and femur fragility by way of a biomechanical flexion take a look at. The outcomes will imply if the administration of GH by way of gene remedy, collectively with MSCs infusion, can be a promising remedy for improving type I OI phenotype.

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