

Letters to the Editor

Autologous Adipose Tissue-Derived Stem Cells Induce Persistent Bone-Like Tissue In Osteonecrotic Femoral Heads: A Molecular Mechanism

TO THE EDITOR:

I read with great interest the paper by Pak entitled "Autologous adipose tissue-derived stem cells induce persistent bone-like tissue in osteonecrotic femoral heads" (1). This work addressed that stem cells can induce bone in an osteonecrotic femoral head. I would like to complete the discussion of Pak by introducing a major complementary route in which stem cells could induce bone-like tissue.

The essential cause of collapse and subsequent pain after osteonecrosis is an imbalance of bone remodeling. Bone disease activity correlate with increased osteoclast activity and decrease bone formation (2). Recent studies have shown that transplantation of adipose-derived stem cells not only produces various bone promoting factors, including hepatocyte growth

factor and extracellular matrix proteins, but also is capable of stimulating proliferation and differentiation of osteoblasts through activation of Smad/extracellular signal-regulated kinase (ERK)/JNK (c-jun NH(2) -terminal kinase) (3). Therefore, these important mechanisms should be borne in mind as the major mechanisms for stem cell – induced bone formation in osteonecrotic femoral heads.

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Response

I appreciate the letter from the reader. We know that paracrine effects are playing major roles when transplanting mesenchymal stem cells. The letter to the author demonstrates one of the very possible molecular mechanisms of successful bone formation due to stem cell transplants. However, it is difficult to postulate that the described mechanism is the major mechanism since the route of injection is different: local injection vs systemic.

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