EXPERIMENTAL ARTHRITIS

Effects of MSCs in spontaneous OA

Mesenchymal stem cells (MSCs) suspended in hyaluronic acid can retard cartilage damage progression when injected into the joints of animals with surgically-induced symptoms of osteoarthritis (OA), but the disease course in such models is more rapid than in people with OA. Now, Kenzo Uchida and colleagues have used Hartley strain guinea pigs, which spontaneously develop OA symptoms from 3 months of age, to demonstrate the short-term benefit of the therapy. “This animal model is highly suitable for the evaluation of disease-modifying treatments,” states Uchida, “as degenerative cartilage changes in the knee joint mimic those of human osteoarthritis.”

The team injected human MSCs into the knee joints of 7-month-old guinea pigs and evaluated the effects after 1, 3 and 5 weeks. “Our results at 5 weeks post-transplantation showed histologically-confirmed partial repair of the articular cartilage,” says Uchida.

Using *in vivo* tracing techniques, the team observed that the MSCs migrated throughout the osteoarthritic cartilage. “Double immunofluorescence analysis also demonstrated strong, though partial, immunostaining of type II collagen around both residual chondrocytes and the injected MSCs,” adds Uchida. The results imply that the injected cells differentiate into chondrocytes and then proliferate.

Longer-term data in this model are needed to confirm the efficacy of this treatment, after which, “we will investigate autologous MSCs isolated from various types of adult mesenchymal tissues such as adipose, synovium and bone marrow,” says Uchida.

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Original article Sato, M. *et al.* Direct transplantation of mesenchymal stem cells into the knee joints of Hartley Strain guinea pig with spontaneous osteoarthritis. *Arthritis Res. Ther.* 14, R31 (2012)