Osteoarthritis (OA) is the most common form of arthritis and mostly results in physical disability. The ability of autologous mesenchymal stem cells to regenerate lost articular cartilage in OA has been shown, but the mechanisms responsible for their benefits are not fully understood. The aim of this study was to estimate the allogeneic stem cells as treatment for OA by microscopic pathology analysis from different sources. Eighteen male New Zealand white rabbits were used in this study. They were divided into three groups (n=6). Rabbit stem cell-treated group (RSTG). Media cell stem cell-treated group (NSTG) and Normal saline-treated group (NSTG). OA was induced by a single intra-articular injection of 2.5 mg of monosodium iodoacetate (MIA) / 0.3 ml normal saline (NS). After 4 weeks of OA induction the (RSTG) was given a single intra-articular injection of 1×106 BM-MSCs (3 groups) or 5×106 BM-MSCs (1 group), at a volume of 0.3 ml medium without cells or normal saline as respectively. Rabbits were euthanized by intravenous injection of pentobarbital sodium (Nembutal®) 3 weeks post-treatment than histopathology features assessed.

The results showed that there were significant differences between the control group and OA rabbits in histopathologic scoring while the RSTG and NSTG showed the worst scores.

In conclusion, single intra-articular injection of rabbit bone marrow-derived stem cells into injured cartilage defects could regenerate the damaged articular cartilage in OA as evidenced by improved histopathological outcomes.

Key Words: Osteoarthritis, Histopathology, Stem Therapy

Introduction

OA affects a large number of humans and animals at different ages, it commonly affects horses, dogs, and cats, at least 70% of joints are implicated in OA disease (McGillivray, 2000). The Osteoarthritis Research Society International (the OA) has defined OA as a disease of joint cartilage affected by the degeneration of articular cartilage with loss of integrity of the articular surfaces and cartilage matrix. OA affects the articular surfaces and cartilage matrix, as well as the synovium and other soft tissues, which may be affected by OA in a variety of ways, including inflammation of the synovium and synovial fluid production.

The synovium is an important role in the early stages of the disease development (Thompson et al., 2007). OA affects the balance of growth and repair of the cartilage matrix in OA. OA affects the articular surfaces and cartilage matrix, as well as the synovium and other soft tissues, which may be affected by OA in a variety of ways, including inflammation of the synovium and synovial fluid production.

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