Short Communication

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Intra articular platelet-rich plasma and transplantation of autologous adipose derived stem cells in advanced osteoarthritis of the knee

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Abstract

Regenerative medicine aims to find new therapeutic options for chronic-degenerative diseases, like knee osteoarthritis, in order to reduce pain and improve function. Mesenchymal stem cells (MSCs) and platelet-rich plasma (PRP) have been candidates for regenerative therapies for knee osteoarthritis.

Materials and Methods:

We have investigated three Brazilian woman presenting with pain, edema and functional joint limitation on the knees. The mean age was 75 years old and it ranges from 70 to 79 years. MRI analysis revealed findings of grade III osteoarthritis of the both knee in two patients and in the left knee of the oldest patient. MRI also shows the presence of osteophytes, signals of joint degeneration and osteonecrosis of the medial condyle and plateau more advanced in the oldest patient.

Adipose tissue of each patient was aspirated and processed under GMP conditions in a cell culture facility for 30 days. MSCs were purified and expanded until the forth passage, when the cells were characterized by confocal microscopy, FACS analysis and differentiation assays into chondrocytes, osteocytes and adipocytes. Absence of chromosomal aberrations was verified by G-band karyotype. The cells were dissociated, resuspended in saline solution containing 20% human serum albumin and placed in syringes.

Under local anesthesia, MSCs were intra-articularly injected into the affected knees. The patients were also administered with autologous activated platelet-rich plasma, intra-articularly, on the day of the lipoaspiration and on the day of MSC transplantation. The second administration of autologous activated platelet-rich plasma was performed five minutes before the MSC transplantation.

Results and Conclusions:

The patients evolved with amelioration of local pain, edema regression and increased joint mobility. MRI analysis demonstrated attenuation of the signs of osteoarthritis and prominent reduction of the images of osteonecrosis.

Association of intra-articular transplantation of MSCs and administration of PRP may be an effective approach to treat knee osteoarthritis.

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Biography

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