

Mesenchymal stem cell transplantation in T1DM patients: Experience of the endocrinology and diabetology department of Marrakech University Hospital

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Background:

According to many studies, mesenchymal stem cell (MSC) therapy derived from adipose tissue is one of the best therapeutic approaches for the treatment of type 1 diabetes. Indeed, MSCs have several characteristics: ease of harvesting and isolation, abundance, their potential to differentiate into multiple lineages, secretion of various cytokines and growth factors, as well as their immunomodulatory effects.

Objectives:

The aim of our study is to investigate the contribution of mesenchymal stem cells derived from adipose tissue or bone marrow of our patients, in improving the management of newly discovered type 1 diabetes, in order to achieve optimal glycemic control.

Methods:

This is a prospective cross-sectional descriptive pilot study over a period of 21 months, involving a series of 5 type 1 diabetic patients who underwent adipose tissue and BM sampling with mesenchymal stem cell isolation and MSC perfusion in association with platelet-rich plasma. Our study was carried out in the Endocrinology and Diabetology department, in collaboration with the plastic surgery department and the regenerative medicine center, of the Mohammed VI University Hospital, Marrakech.

Results:

The mean age of our patients was 21.2 years. Our study included a total of 3 women and 2 men with a sex ratio of 0.6. The average duration of diabetes was 2 years and 3 months. Adipose tissue was taken from 80% of plastic surgery patients and bone marrow from 20% of trauma patients. No patient experienced major or minor incidents. Post-transplant follow-up was quarterly for a period of 24 months. Average insulin requirements were reduced in the majority of patients after mesenchymal stem cell transplantation.

Conclusion:

MSC cell therapy represents an efficient new modality of treatment for patients with T1DM. Meta-analysis demonstrated that autologous stem cell transplantation can be considered a safe and effective approach for treatment of many DM patients, it also has notable limitations.

Keywords:

MSC-T1DM-transplantations-treatment