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Abstract

Introduction

Use of allogeneic MSC for repair of large defects may be an alternative to autologous and allogeneic tissue-grafting procedures. An allogeneic approach would enable MSC to be isolated from any donor, expanded and cryopreserved, providing a readily available source of progenitors for cell replacement therapy.

Current knowledge regarding the immunobiology and clinical application of MSC needs to be strengthened further to establish MSC as a safe and effective therapeutic tool in regenerative medicine.

This paper discusses alloreactivity of MSCs with particular reference to serum level of interleukin-10 (IL-10), in the engraftment process following allogenic bone marrow mesenchymal stem cells injection to the femoral muscle, to explain allogenic MSCs's role as immunomodulators and their multilineage differentiation potential and possible use in tissue regeneration and repair.

Method

Laboratory experimental study. Serum IL-10 levels were measured in over 16 samples of New Zealand white rabbit, before and for up to 1 weeks following transplantation using a enzyme-linked immunoabsorbent assay (ELISA) IL-10 kit for rabbit, with a sensitivity of ≥ 78 pg/mL.

Eight white rabbit received 2 x 10^6 injection of allogenic MSCs into their femoral muscle. In the remaining 8 rabbit, act as control, were injected with phosphate buffered saline. At day 8 post transplantation, injection site on femoral muscle were being obtained for histopathology examination using hematoxylin-eosine staining.

Result

Histopathology examination showed no significant different found from limphocytes, monocytes, and polymorphonuclear cells between allogenic MSCs resipients and control group. Comparation of serum IL-10 peak levels were studied in the immediate posttransplant period between day 0 and day 8 in recipients of allogenic MSCs as well as control group.

Conclusion
Allogenic MSCs may modulate immunobiological process during their engraftment. This animal study showed favourable result toward MSCs' alloreactivity.

Keyword: allogeneic, mesenchymal, stem, cells, interleukin 10, immunobiology, tissue,

Daftar Pustaka: