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Differentiation of bone marrow derived mesenchymal stem cells into hepatocyte-like cells

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Cirrhosis is the end-stage liver fibrosis, whereby normal liver architecture is disrupted by fibrotic bands, parenchymal nodules and vascular distortion. Portal hypertension and hepatocyte dysfunction are the end results and give rise to major systemic complications and premature death. Mesenchymal stem cells (MSC) have the capacity of self-renew and to give rise to cells of various lineages, so MSC can be isolated from bone marrow (BM) and induced to differentiate into hepatocyte-like cells. MSC were induced to differentiate into hepatocyte-like cells by hepatotic growth factor (HGF) and fibroblast growth factor-4 (FGF-4). Differentiated cells were examined for the expression of hepatocyte-specific markers and hepatocyte functions. MSC were isolated. Flow cytometry analysis showed that they expressed the MSC-specific markers, reverse transcriptase–polymerase chain reaction (RT-PCR) demonstrated that MSC expressed the hepatocyte-specific marker cytokeratin 18 (CK-18) following hepatocyte induction. This study demonstrates that BM-derived - MSC can differentiate into functional hepatocyte-like cells following the induction of HGF and FGF-4. MSC can serve as a favorable cell source for tissue-engineering in the treatment of liver disease.

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Renal transplantation in HIV-infected patients: The first Portuguese review

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Introduction: With the introduction of combination antiretroviral therapy (cART), prognosis of HIV infection has been improved and kidney transplantation (KT) in HIV positive patients became possible.

Methods: We reviewed the demographic, clinical, laboratorial and therapeutic data of all the HIV-infected patients who underwent KT prior between 2009 (first KT in Portugal in a HIV-infected patient) and May 2014. Case accrual was through all Portuguese KT centers where KT in a HIV-infected patient was performed. Patients were transplanted following the American and Spanish guideline recommendations that included maintenance on cART, undetectable plasma HIV RNA copies and absolute CD4 count of at least 200cells/μl in the last 6 months.

Results: Fourteen KT were performed on men, 3 KT on women. The mean age of patients at the time of transplantation was 49.9±11.7 years. HIV status was known for 12±5 years. Eight patients had AIDS in the past and all patients received grafts from deceased donors. Twelve patients (64.7%) received induction therapy with basiliximab and two patients had early graft loss. In 2 patients humoral rejection was diagnosed and in 3 patients, cellular rejection. Two patients died and one additional patient had early graft loss.

Conclusion: KT is a possible, but challenging, renal replacement therapy in selected HIV patients. Even in those with AIDS criteria in the past, when the disease is controlled and after the reconstitution of the immune system with cART, KT can be performed. Nevertheless, the risk-benefit ratio for each patient needs to be taken in consideration.

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