Potensi karakteristik dan diferensiasi sel punca mesenkimal sumsum tulang krista iliaka pasien lupus eritematosus sistemik yang menderita nekrosis avaskular kaput femur = Potency characteristic and differentiation of iliac crest bone marrow derived mesenchymal stem cell of systemic lupus erythematosus patients complicated with avascular necrosis of femoral head / Sukry Asdar Putra Hasibuan

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Abstrak

[ABSTRAK
Pendahuluan. Sel punca mesenkimal (SPM) sangat menjanjikan dalam bidang rekayasa jaringan karena sifatnya yang multipoten, cepat berproliferasi, dan berkemampuan tinggi untuk beregenerasi. SPM sumsum tulang dapat menjadi terapi pilihan nekrosis avaskular (AVN) kaput femur yang banyak diderita oleh pasien lupus eritematosus sistemik (LES) pada masa sekarang ini. SPM sumsum tulang penderita LES mengalami gangguan fenotip, proliferasi, diferensiasi. Terapi SPM pada AVN kaput femur dapat menggunakan donor otologus yang dilaporkan memberikan hasil luaran yang baik dan keamanan yang signifikan. Oleh karena itu, diperlukan penelitian untuk mengetahui potensi, karakteristik, dan diferensiasi SPM sumsum tulang pasien LES yang dihubungkan dengan usia.
Metode. Penelitian ini adalah penelitian in vitro yang meneliti 4 subjek penderita LES di Rumah Sakit Cipto Mangunkusumo Jakarta. Aspirat SPM sumsum tulang dilakukan isolasi, ekspansi dan diferensiasi. Analisis statistik menggunakan uji korelasi spearman untuk melihat hubungan usia pasien LES dengan waktu konfluensi, jumlah sel konfluens dan waktu diferensiasi osteogenik, kondrogenik, dan adipogenik.
Hasil dan Diskusi. Rerata jumlah sel konfluens adalah 7.44 x 105 ± 3.06 x 105 sel/ml, rerata waktu konfluens adalah 20.75 ± 4.99 hari, median waktu diferensiasi adipogenik yaitu 17.5 hari (rentang 14-21), waktu diferensiasi osteogenik dan kondrogenik yaitu 21 hari. Terdapat korelasi positif bermakna antara usia penderita LES dengan waktu konfluens SPM (p<0.001) dan korelasi negatif bermakna antara usia penderita LES dengan jumlah sel konfluens SPM (p<0.001).
Simpulan. SPM sumsum tulang krista iliaka penderita LES mampu diisolasi, berproliferasi dan berdiferensiasi. SPM sumsum tulang penderita LES memiliki waktu konfluens dan waktu diferensiasi yang lebih lama dan jumlah sel konfluens yang lebih sedikit.
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ABSTRACT
Introduction. Mesenchymal stem cells (MSC) is very promising in the field of tissue engineering because it is multipotent, rapidly proliferate, and high ability to regenerate bone marrow. BM-MSC may be treatment of choice of avascular necrosis (AVN) of femoral head that affects many systemic lupus erythematosus (SLE) patients at the present time. BM-MSC of SLE patients has impairment in phenotype, proliferation, and differentiation. Mesenchymal stem cell therapy on femoral head AVN which use autologous donors are reported deliver good outcomes and safety. Therefore, research is needed to determine the potency, characteristics, and differentiation of BM-MSC in patients with SLE and related with age.
Methods. This study is in vitro study that examined four subjects as SLE patients in Cipto Mangunkusumo

Hospital. BM-MSC of SLE patients is performed isolation, expansion and differentiation. Statistical analysis using pearson and spearman correlation test to see the correlation of age of SLE patients with confluence time, the number of confluence cells and differentiation time.
Result and Discussion. Mean of confluent cell numbers is 7.44 x 105 ± 3.06 x 105cells/ml, mean of confluent time is 20.75 ± 4.99 days, median of adipogenic differentiation time is 17.5 days (range 14-21), osteogenic and chondrogenic differentiation time is 21 days. There is a positive correlation between patient?s age with confluence time ($p < 0.001$) and negative correlation with MSC confluence cell count ($p < 0.001$).
Conclusion. BM-MSC form iliac crest in patients with SLE can be isolated, proliferated and differentiated. BM-MSC of SLE patients has longer confluence time and differentiation time and lower confluence cell count., Introduction. Mesenchymal stem cells (MSC) is very promising in the field of tissue engineering because it is multipotent, rapidly proliferate, and high ability to regenerate bone marrow. BM-MSC may be treatment of choice of avascular necrosis (AVN) of femoral head that affects many systemic lupus erythematosus (SLE) patients at the present time. BM-MSC of SLE patients has impairment in phenotype, proliferation, and differentiation. Mesenchymal stem cell therapy on femoral head AVN which use autologous donors are reported deliver good outcomes and safety. Therefore, research is needed to determine the potency, characteristics, and differentiation of BM-MSC in patients with SLE and related with age.
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