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Kapasitas Proliferasi Sel Punca Pulpa Gigi Sulung dan Sel Punca Pulpa Gigi Permanen Pasien Celah Bibir dan Palatum = Proliferative Capacity of Stem Cells from Exfoliated Deciduous Teeth and Dental Pulp Stem Cells in Cleft Lip and Palate Patients

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Abstrak

Latar Belakang: Celah bibir dan palatum (CLP) merupakan salah satu kelainan kongenital yang menghasilkan defek jaringan lunak maupun jaringan keras dan membutuhkan perawatan rekonstruksi tulang alveolar dan palatum. Celah bibir dan palatum dianggap berasal dari anomali proliferasi sel akibat faktor genetika. Autologous bone graft adalah baku emas untuk memperbaiki defek tulang palatum pada pasien CLP. Namun demikian, perawatan tersebut membutuhkan prosedur yang invasif. Perawatan melalui rekayasa jaringan dapat menjadi alternatif perawatan. Rekonstruksi tulang alveolar melalui rekayasa jaringan membutuhkan jumlah sel yang banyak sehingga kapasitas proliferasi sel punca merupakan aspek penting dalam penerapan klinis. Sel punca pulpa gigi sulung (SHED) dan sel punca pulpa gigi permanen (DPSCs) dapat menjadi sumber sel yang ideal karena memiliki kapasitas proliferasi yang tinggi, kemampuan diferensiasi ke berbagai tipe sel, isolasi yang mudah, dan aksesibilitas yang baik. Namun, kapasitas proliferasi SHED dan DPSCs pasien CLP belum diketahui.

Tujuan: Penelitian ini bertujuan membandingkan kapasitas proliferasi SHED dan DPSCs pasien celah bibir dan palatum.

Metode: SHED dan DPSCs dari pasien CLP dikultur hingga mencapai 70%-80% confluent. Kapasitas proliferasi sel setelah dikultur selama 24 jam, 48 jam, dan 72 jam dianalisis melalui uji MTT.

Hasil: SHED setelah dikultur 24 jam menunjukkan nilai rata-rata optical density yang lebih tinggi secara signifikan ($p<0,05$). SHED dan DPSCs setelah dikultur 48 jam dan 72 jam tidak menunjukkan perbedaan nilai rata-rata optical density secara statistik ($p>0,05$).

Kesimpulan: SHED pasien CLP memiliki kapasitas proliferasi lebih tinggi secara signifikan hanya pada 24 jam pertama. Pada 48 jam dan 72 jam pertama, SHED dan DPSCs pasien CLP memiliki kesamaan kapasitas proliferasi.

.....Background: Cleft lip and palate (CLP) is one of orofacial congenital malformations that results in both soft tissue and hard tissue defect. It requires reconstruction of the maxillary alveolar cleft. Cleft lip and palate is thought to be came from anomalies of cell proliferation caused by genetic factors. Autologous bone graft have been the gold standard treatment to repair maxillary alveolar and palate clefts. However, such treatment needs an invasive procedure that may induce pain. To overcome those disadvantages, tissue engineering has received attention to be new alternative treatment.

Reconstruction of maxillary alveolar cleft requires huge number of stem cells so that proliferative capacity is important traits before clinical application. Stem Cells from Exfoliateed Deciduous Teeth (SHED) and

Dental Pulp Stem Cells (DPSCs) can be ideal sources of stem cell since they are known to have high proliferative capacity, multilineage differentiation, ease of isolation, and well accesibility. However, proliferative capacity of SHED and DPSCs isolated from CLP patients have not yet known.

Objective: The aim of this study was to compare proliferative capacity between cultured stem cells from exfoliated deciduous teeth and dental pulp stem cells isolated from cleft lip and palate patients.

Methods: SHED and DPSCs isolated from cleft patient were cultured until it reached 70%-80% confluency. Proliferative capacity after culturing for 24 hours, 48 hours, and 72 hours were analyzed using MTT Assay.

Results: SHED after culturing for 24 hours showed higher optical density average value significantly ($p<0,05$). SHED and DPSCs after culturing for 48 hours and 72 hours has no difference optical density average value significantly ($p>0,05$).

Conclusions: SHED from cleft patients showed higher proliferative capacity significantly only on first 24 hours culturing. SHED and DPSCs have similar proliferative capacity on 48 hous and 72 hours culturing.<i/>