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Abstracts

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YI 03

Effect of Perifistular Application of Adipose-Derived Mesenchymal Stem Cells – Experimental Study

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Background: Local application of adipose-derived mesenchymal stem cells (ADSCs) is a promising method for the treatment of perianal fistula in patients with Crohn's disease. More clinical and experimental studies are needed including the technique of in vivo monitoring.

The aim of the study was to evaluate the fistula healing after application of ADSCs in perifistular tissue.

Material and Methods: Coecostomy was used as a fistula model in 11 Lewis rats. The adipose tissue was harvested from transgenic donor expressing firefly luciferase (LEW-Tg(Rosa-luc)11jmsk; Jichi Medical School). The ADSCs were isolated using collagenase and injected (1-2*10⁶ cells/ml) in perifistular tissue. After application of D-luciferin (25mg/kg), rats were imaged in IVIS Lumina camera on days 0, 2, 7, 14 and 30. Fistula drainage assessment (FDA) was used to evaluate fistula healing.

Result: The fistula was identified as healed in 4/11 animals. Bioluminescence was strongest 2 days after application (4,46*10⁵ (5,1*10⁴-2,7*10⁶). The radiance decreased as follows 1,15*10⁵ (4,05*10⁴ - 6,4*10⁵) on day 7; 7,29*10⁴ (9,36*10³-2,88*10⁵) on day 14 and 2,94*10⁴ (4,93*10³-1,70*10⁵) on day 30 (values are medians in p/s/cm²/sr). There was a trend to higher luminescence in animals with healed fistula (30 days after injection - 8,23*10⁴ (1,18*10⁴-1,70*10⁵) vs. 2,75*10⁴ (4,93*10³-6,88*10⁴); p=0,18).

Conclusion: Local application of ADSCs can lead to fistula healing. The effect of ADSCs was confirmed by higher luminescence in healed rats 30 days after implantation. Supported by NT13708

YI 04

Functional and Morphological Changes During Triggered Liver Regeneration

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Background: Selective portal vein ligation (sPVL) results in ipsilateral atrophy and hypertrophy of contralateral liver segments. The aim of the present study was to examine the morphological and functional changes during this process.

The aim of the study was to evaluate the fistula healing after application of ADSCs in perifistular tissue.

Material and Methods: Male Wistar rats (n=84) underwent sPVL. The portal venous supply of the 80% of whole parenchyma was ligated. The regeneration rate, the lobular area and the portal pressure was measured. To quantify the mitotic and apoptotic activity Ki-67 and Caspase-3 immunostaining was performed. To measure the functional state of the liver indocyanine-green (ICG) clearance test was performed and the retention (R15) and the plasma disappearance rate (PDR) of the ICG was calculated. The animals were sacrificed 0, 12 hours, 1, 2, 3, 5, 7 days after sPVL.

Result: Liver regeneration rate was 266,2% at 7th postoperative days in lobes I-II and 18,8% in lobes III-VII. The mitotic activity reached its maximum 48h after sPVL (20.61±3.56 vs. 142.33±18.86). As a result of the upregulated cell division the lobular area significantly increased by the 7th postoperative day (300502,3789±15402,38um² vs. 714514,2965±30490,89um²). According to the R15 and PDR scores the liver function temporarily impaired after the sPVL, and it increased parallel with the regeneration of the non-ligated lobes reaching the physiological level by 7th postoperative day.

Conclusion: According to our data it can be suggested that sPVL induced liver regeneration caused not only weight increase, but functional recovery as well.

YI 05

Truncus Arteriosus Repair: Cohort Analysis of 24 Patients for Mortality and Reoperations

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Background: Truncus arteriosus (TA) represents 1% to 3% of congenital heart malformations and carries high mortality if untreated. Surgical correction requires