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内皮细胞通过Hedgehog通路促进胶质瘤干细

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Title: Endothelial cells promote self-renewal of glioma stem cells through Hedgehog pathway

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关键词: 胶质瘤干细胞; 内皮细胞; 信号转导; Hedgehog通路

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摘要: 目的 探讨Hedgehog通路在内皮细胞促进胶质瘤干细胞（glioma stem cell，GSC）自我更新中的可能作用。 方法 实验以GL261细胞系中分离的GSC和内皮细胞系b.END3为研究材料，采用Transwell双室细胞培养、极限稀释法成球实验、实时定量PCR、Western blot、体内移植瘤实验以及慢病毒载体基因干扰等方法，检测内皮细胞对GSC成球、成瘤能力、干性基因表达以及Hedgehog信号通路相关的部分基因表达的影响。 结果 与对照组相比：①GSC与内皮细胞共培养后其体外成球能力明显增强，表现为形成干细胞球数目明显增多，体积明显增大，尤其在每孔5个（24.3% *vs* 11.3%）和每孔10个细胞（39.4% *vs* 25.8%）的极低浓度下更加明显（$P<0.05$）。②共培养体系中，GSC的干性相关基因Oligo2、Bmi1与Hedgehog信号

通路相关基因Gli1的mRNA和蛋白表达明显增加（$P<0.05$）。③体内移植瘤实验发现，与内皮细胞共同注射的GSC成瘤能力明显增强，所形成的移植瘤体积显著大于对照组($P<0.05$)，而且出现了部分瘤体破溃、小鼠死亡。④通过慢病毒载体基因干扰Smo基因表达抑制Hedgehog信号通路后，内皮细胞促进GSC自我更新的上述现象消失。 结论 内皮细胞可能通过激活Hedgehog信号通路促进GSC自我更新。

Abstract: Objective To explore the role of Hedgehog pathway in endothelial cells promoting self-renewal of glioma stem cell (GSC). Methods GSC derived from glioblastoma cell line GL261 and brain microvessel endothelial cell line b.END3 were used. Transwell co-culture system, limit dilution assay, real-time PCR, Western blotting, xenograft experiment and gene knock-down assay were applied to determine the self-renewal, tumorigenic ability and gene expression of Hedgehog pathway in GSC spheres. Results (1) More and larger tumor spheres were formed by GSC after co-culture with endothelial cells ($P<0.05$), especially under a low cell concentration of 5 cells per well (24.3% *vs* 11.3%) and 10 cells per well (39.4% *vs* 25.8%). (2) Hedgehog pathway related genes including Gli1, Oligo2 and Bmi1 were up-regulated in the co-cultured GSC spheres ($P<0.05$). (3) Larger xenografts were generated by GSC spheres mixed with endothelial cells, which also resulted in tumor rupture and model death ($P<0.05$). (4) The phenomenon above nearly disappeared when Hedgehog pathway had been inhibited by Smo gene knockdown. Conclusion Endothelial cells promote self-renewal of GSC through activating Hedgehog pathway.

参考文献/REFERENCES:

闫广宁，杨浪，崔有宏，等. 内皮细胞通过Hedgehog通路促进胶质瘤干细胞自我更新[J].第三军医大学学报,2013,35(8):733-736.

相似文献/REFERENCES:

[1]宋明宝,于学军,朱光旭,等.双层共培养模型中缝隙连接在内皮细胞调节平滑肌细胞增殖能力中的作用[J].第三军医大学学报,2009,31(04):285.

SONG Ming-bao,YU Xue-jun,ZHU Guang-xu,et al.Interaction between endothelial cells and smooth muscle cells: an in vitro study based on Transwell insert[J].J Third Mil Med Univ,2009,31(08):285.

[2]莫贵艳,李敏,胡成平,等.茶氨酸对内皮细胞生长及肺癌血管生成的影响[J].第三军医大学学报,2012,34