[1]王勇,唐川,兰曦,等.沉默CD133基因对CD133+肝癌干细胞放射敏感性的影响[J].第三军医大学学报,2012,34(23):2373-2377.

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沉默CD133基因对CD133$^+$肝癌干细胞放射敏感性的

Title:　RNAi targeting CD133 enhances radiosensitivity in CD133 positive liver cancer stem cells

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摘要：　目的　研究沉默CD133基因对人肝癌CD133$^+$-HepG2干细胞放射敏感性的影响。方法　免疫磁珠分选HepG2细胞；流式细胞术检测分选前后CD133表达率；NOD/SCID小鼠成瘤实验验证其干性；靶向沉默CD133基因并分组（空白组、阴性感染组、阳性感染组）；RT-PCR和Western blot检测各组CD133基因mRNA和蛋白表达；克隆形成实验检测各组细胞经不同剂量照射后的克隆形成率及存活率，绘制存活曲线并计算各组细胞放射生物学参数D_0、Dq、N及放射增敏比(SER)；流式细胞术检测各组细胞周期及凋亡情况。结果　流式细胞术检测结果显示，分选前后CD133表达率分别为（1.36±0.20）%和（87.62±1.92）%。CD133$^+$细胞在细胞数为1×10^3/ml时即可形成皮下移植瘤。RT-PCR和Western blot检测结果显示，阳性感染组CD133 mRNA和蛋白表达均受到明显抑制。流式细胞术检测结果显示：阳性感染组G_1、S期减少G_2期增加，细胞凋亡率明显增加。克隆形成实验显示阳性感染组D_1、Dq、N值与SF_1均减小，放射敏感性明显增强，其SER为（1.37±0.02），差异均具有统计学意义（P<0.05）。结论　CD133作为肝癌干细胞的表面标志物之一，可能成为肝癌干细胞放射治疗增敏的靶点。

Abstract:　Objective　To determine the effects of CD133-downregulation on the

radiosensitivity of CD133$^+$HepG2 cancer stem cells (CSCs) in hepatocellular carcinoma. Methods Magnetic-activated cell sorting (MACS) was used to isolate CD133$^+$ and CD133$^-$cells from HepG2 cells. Flow cytometry was used to detect the expression of CD133 before and after cells isolation. The NOD/SCID mice transplantation tumor experiments were performed to validate the cancer stem-like properties of sorted CD133$^+$ cells. Targeted silencing towards CD133 gene was performed, and the cells were divided into blank control group, negative-transfection group and positive-transfection group. RT-PCR and Western blotting were used to detect the mRNA and protein expression of CD133. Colony formation assay was applied to detect colony formation efficiency and survival rate after irradiation at different doses. Survival curve was drawn and radiobiology parameters D_0, Dq, N and SER (sensitive enhancement ratio) were counted. Flow cytometry was used to test cell cycle and apoptosis.

Results Flow cytometry indicated that the expression rate of CD133 was (1.36$\pm$0.20)% and (87.62$\pm$1.92)% respectively before and after MACS isolation. When the obtained CD133$^+$ cells at a dose of 1×10^3/ml, subcutaneous tumor was found in the NOD/SCID mice after implantation. The expression levels of CD133 at mRNA and protein level were significantly decreased in positive-transfection group. After CD133-downregulation, the cells at G1 and S phase were decreased whereas those at G2 phase and apoptotic rate were increased significantly. Colony formation results showed that D_0, Dq, N and SF$_2$were decreased while and SER was increased significantly in positive-transfection group (P<0.05).

Conclusion CD133, as a marker of CSCs in liver cancer, could be a target for radiosensitization in liver CSCs treatment.

参考文献/REFERENCES

王勇, 唐川, 兰曦, 等. 沉默CD133基因对CD133$^+$肝癌干细胞放射敏感性的影响[J]. 第三军医大学学报,2012,34(23):2373-2377.

备注/Memo: -