Expression of Livin and the Inhibition of Tumor Progression by Livin Silencing in Laryngohypopharyngeal Cancer

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Introduction

The structure of Livin

- Human IAPs family members: one or more repeats of a 70 amino acids domain (the baculoviral IAP repeats-BIR)
- Elevated Livin expression in the variable cancer cells
  - Breast, cervix, prostate, melanoma, lymphoma, gastric cancer, colon cancer, pancreatic cancer, and hematoma
- Livin is associated with the tumor progression in several cancers.
- Livin as a target for new anticancer strategies - melanoma, breast cancer, lung cancer

The expression and role of Livin

Livin was the potential target for molecular therapy in human laryngohypopharyngeal cancer (LHSCC) ?
- To evaluate the expression of Livin and investigate whether Livin knockdown affects tumor aggressiveness in LHSCC

Results

- Livin knockdown in cell migration in human laryngohypopharyngeal squamous carcinoma cell lines. Cell migration decreased in laryngohypopharyngeal squamous carcinoma cell lines (A) rather than in negative control cells transfected with scrambled siRNA (C). Cell migration is displayed as relative healing distances measured in three random sites. Values indicate mean ± SEM for three independent experiments (p<0.05).

Objects

Livin is the potential target for molecular therapy in human laryngohypopharyngeal cancer (LHSCC) ?
- To evaluate the expression of Livin and investigate whether Livin knockdown affects tumor aggressiveness in LHSCC

Table 1. Correlation between Livin expression and clinicopathological parameters in patients with laryngohypopharyngeal squamous carcinoma cells. In the positive Livin expression group, distant metastasis tended to occur frequently, but the difference was not statistically significant (p>0.05). Livin expression in human LHSCC was not associated with age, sex, location, T stage, tumor invasion, N stage, lymph node metastasis, chemotherapy sensitivity, tumor response after chemotherapy therapy, and recurrence (p>0.05).

Table 2. Overall survival curve according to Livin expression (negative expression, solid line and positive expression, dotted line) in human laryngohypopharyngeal squamous carcinoma cells. For 60 patients with advanced LHSCC enrolled in this study, for 5 year and 10 year overall survival rate was 50% and 40%, respectively. In median duration of overall survival was 687 months versus 472 months for the negative Livin expression group and the positive Livin expression group, respectively. However, no significant statistical difference in overall survival was found between the two groups.

Summary

- Livin was overexpressed in LHSCC tissues
- Knockdown of Livin suppresses cell invasion and migration in LHSCCs
- Knockdown of Livin inhibits cell proliferation and induces cell apoptosis in LHSCCs
- Knockdown of Livin induces cell apoptosis by activating caspase 3, caspase 7, PARP in LHSCCs.

Conclusion

- Livin was overexpressed in LHSCC tissues. Livin siRNA-mediated knockdown inhibited cell invasion, migration, and apoptosis activity in LHSCC cells.
- Livin could be useful for therapeutic intervention against tumor progression in LHSCC.