Introduction

- Gastric cancer rates are at an extremely high in Asian countries such as China.
- Gastric cancer mortality rate in China is FIND.
- If the cancer has metastasized to organs such as the liver or brain, the 5-year survival rate drops to 5%.
- In this report, the gene will be known as GEN to protect the further work of the graduate student.
- GEN is repressed in cancer cell lines and thus in gastric cancer. It is believed to be a tumor suppressor.

Objective of the Study

The research project focused on discovering the role of GEN gene and its effects on tumor metastasis in vitro.

Methods

The Lab of Translational Medicine under the leadership of Dr. Tianhua Zhou studied different genes and proteins involved in gastric cancer metastasis using approaches such as animal models and traditional molecular biology experiments such as Western Blot, Transwell, and Immunofluorescence Assays.

Results

GEN is 35 kiloDalton in size and is suppressed in cancer cell lines such as HGC and BGC823. Overexpression of GEN and two types of siRNA were used to study the protein expression level’s effect on metastasis.

BGC823 cells were used to study overexpression using an injected plasmid. Less cells migrated after treatment. The Western blot supports the change in protein expression proving that the plasmid transfection worked.

In both cases, however, cells with further repressed GEN migrated more. Visual and graphical analysis supports the claim. The Western blot results support the claim of the treatment causing the increase in migration and invasion rate.

Discussion

These findings signify that GEN is a tumor suppressor gene that plays a significant role in cancer metastasis. Upon suppression of the gene, the migration and invasion rates of the cells increased. Correlating, the overexpression of GEN and the cell’s lacking ability to migrate and invade, further proves that cancer cells themselves shut down GEN internally in order to be able to migrate to such organs as the liver.

A study done in vivo should occur next in order to test the theories accuracy in practice. Further, an investigation of the mechanism is necessary to study the association of GEN with other proteins.

Questions

- Why is gastric cancer so prevalent in Asian populations?
- How do cancer cells regulate the expression of GEN?

Conclusion

In conclusion, GEN could become incorporated into immunotherapy treatments of many gastric cancers. By reversing or overexpressing the silenced gene, patients may lower their chance of metastasis and thus have a higher rate of survival.

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