Integrated Genomic Analysis Of Human Glioblastoma Multiforme

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Definitions

Genetic alterations- permanent alteration in the DNA that makes up a gene

GBM- Glioblastoma Multiforme

Homozygous Deletions- the loss of both alleles

IDH1- isocitrate dehydrogenase 1
Hypothesis

The hypothesis of this analyzes is that IDH1 alterations identify a biologically specific subgroup of GBM patients.
Methods Used

A few methods used to find the answer to their hypothesis were:

- Amplicon traces were analyzed using automated approaches to identify changes in the tumor.
- DNA examples and xenografts were used to find the number of mutations in GBM.
- 22 GBM samples were chosen to be used for PCR sequence analysis.
Results of the Analysis

- Analysis lead to the discovery of a variety of genes that were not known to be altered in GBMs.
- Mutations in the active site of isocitrate dehydrogenase 1 in 12% of GBM patients were found.
- The analyzes also revealed that one tumor from a GBM patient that was treated with radiation therapy and temozolomide had 17 times as many alterations as any of the other patients. Also their mutation spectrum had a huge difference than the other patients.
- Patients with IDH1 mutations had a very high frequency of TP53 mutation.
Something interesting that I learned

- Tumors can be developed in any part of the brain and come in different sizes
- Survival time for GBM patients are 12-18 months
- Glioblastoma is the most common and aggressive brain tumor
- 200,000 US cases per year
- This tumor grows and spreads throughout time
- Symptoms: headaches, seizures, blurred vision, personality changes