CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S0401

Project Title
Effect of Neurotrophin-3 on Suppression of Tumor Vascularization

Abstract

Objectives/Goals
Investigations were performed on two sets of glioma tumors that were generated earlier in the absence or presence of Neurotrophin-3 (NT-3) with a significant difference in size. The objective of my study was to evaluate and analyse the disparity between the growth of the two tumors.

Methods/Materials
Immunohistochemistry was performed on cryostat sections using antibodies specific for brain cell types and protein markers expressed on blood vessels. I further carried out double immunofluorescence imaging using different conjugated fluorochromes (red and green) with an epifluorescence microscope.

Results
The evaluation of digital images of AT and ATNT-3 glioma tumors revealed an elaborate network of vascularization (angiogenesis) of AT tumor and a total lack of angiogenesis in ATNT-3 tumor. The analysis further showed that progression of AT tumor growth appears to be directly related to the supply of growth nutrients in the core of the tumor mass.

Conclusions/Discussion
The present study suggests an inhibitory role of NT-3 in angiogenesis and suppression of glioma growth. NT-3 appears promising in tumor therapy.

Summary Statement
The comparative study of the AT tumor and the ATNT-3 tumor suggests that NT-3 has the potential to prevent vascularization.

Help Received
Mentor at UCLA (Dr. Shalini Kumar) provided the tissue samples, antibodies, and microscope for investigation. Lab facilities at UCLA were used. Father helped arrange poster board.