John Wesley Powell Student Research Conference

2009, 20th Annual JWP Conference

Apr 18th, 9:00 AM - 10:00 AM

Response of Anaplastic Thyroid Tumors to VEGF-Trap, an Anti-Angiogenic Agent

Isabella Rossi
Illinois Wesleyan University

Fiemu Nwariaku, Faculty Advisor
University of Texas-Southwestern Medical Center

Poster Presentation P45

RESPONSE OF ANAPLASTIC THYROID TUMORS TO VEGF-TRAP, AN ANTI-ANGIOGENIC AGENT

Isabella Rossi and Fiemu Nwariaku*
Biology Department, Illinois Wesleyan University and
University of Texas Southwestern Medical Center

Vascular Endothelial Growth Factor (VEGF) is the major proangiogenic factor secreted by tumor cells. VEGF causes endothelial cell proliferation, migration, and survival, leading to the formation of new blood vessels that are essential for tumor growth and metastases. Anti-VEGF therapy involving an anti-VEGF monoclonal antibody has been successfully used to treat a variety of cancers. However, this approach has met with mixed results. A recently developed antibody, VEGF-Trap, was developed to improve the efficacy of anti-VEGF strategies. VEGF-Trap is a synthetic protein composed of the VEGF-binding domains VEGF Receptor 1 (VEGFR1) and VEGFR2, resulting in a higher binding affinity for VEGF than the monoclonal antibody. This study determined the effect of VEGF-Trap in anaplastic thyroid carcinoma, an aggressive form of cancer with high mortality and metastases rates. Mice bearing anaplastic tumors showed improved survival when treated with VEGF-Trap. The size of the tumors, in addition to the microvessel density, significantly decreased. Additionally, the results indicated compensatory VEGF production as well as an increase in macrophage density. Overall, the study showed anaplastic thyroid cancer to be susceptible to treatment with VEGF-Trap. Potential resistance of tumor blood vessels to anti-VEGF therapy is hypothesized to be conferred by pericytes, which provide survival signals for blood vessels. Therefore, a dual targeting of both endothelial cells and pericytes by combining VEGF-trap with an anti-PDGF therapy may prove to be a more efficient anti-angiogenic therapy for anaplastic thyroid cancer