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Biological interventions to interfere micro-environmental and endocrine machinery in cancer: Application of endocrine manipulation in advanced cancer

Growth factors consist of variety of molecules involved in tumor growth and development. Insulin like growth factor 1(IGF-1), for example is known for inducing carcinogenesis, and recently suggested to correlate with survival. It also has been suggested that fibroblast growth factor (FGF) is involved in epidermal-mesenchymal transition (EMT) and further metastasis, and finally the tumors with higher epithelial production of mRNA VEGF have increased potential to metastasize. Also, it has been already suggested that the tendency of a tumor to spread to the lymphatics is influenced by transforming growth factor (TGF), a downstream target of IGF-1. The reason growth factors play a critical role is their correlation with overall survival. For example, plasma VEGF, as a biomarker for tumor angiogenesis has been shown by our research and by other colleagues to correlate with survival. The theory as we describe here, is in concert with the concept of the tumor, as an endocrine response machine, stimulated by the microenvironmental influence. Such cross talk is bilateral and mimics the fetal/mother cellular and growth cross talk, involving several cytokines, as well as interleukin 11, 4, 34, etc. Unfortunately, current standard of care has failed in advanced solid tumors to generally affect the overall survival. In fact, the tendency of a tumor to spread is generally increased while using traditional chemotherapies. This is not only because of increased intra-tumoral hypoxia, induced by cytotoxic therapies, but also an increased production of growth factors. For example, growth factors such as TGF-1 and related CCL-1 are shown to be increased with the use of taxanes. In this article, we review the scientific merits of a "direct" inhibition of multiple growth factors involved with tumor growth and metastasis. This novel approach targets IGF-1, TGF, FGF, HGF and VEGF, simultaneously. We will also review a case series of variety of advanced solid tumors, in clinical setting, treated with such approach successfully and further elaborate on companion diagnostic tools used as biomarkers. We conclude that further clinical trials would be warranted based on our promising preliminary data.

Biography

Mohammad Nezami is a Board Certified Physician graduated from USC and UCSF residencies. He has functioned as a Faculty Teacher during his training as well as Invited Presenter at Society of Teachers in Family Medicine. He has been in practice for 18 years and currently is the President of Pacific Medical Center of Hope in California. He is promoting research in Conventional Oncology at various places.

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