

Anti-Angiogenesis (Metronomics)

Angiogenesis and Tumor Growth:



Angiogenesis is a physiological process by which new blood vessels develop from preexisting vessels. It can lead to neovascularization, the formation of functional microvascular networks in tissue not normally vascularized or vascularized with a red blood cell perfusion. One possible mechanism for neovascularization can be intussusception, the splitting of blood vessels to form new ones. Angiogenesis is vital, because it allows tissue growth, whether in adults during menstrual cycles and the healing of wounds, or most significantly during fetal development. In addition, angiogenesis can play a role in pathology.

Anti-Angiogenesis and the New Drugs:

Cancerous cells divide in an uncontrolled fashion forming aggregates called tumors. Once the immune system is unable to effectively attack these small clusters of tumor cells, they begin to grow into larger tumors. The tumor forms its own new blood vessels, which allows it to develop into a larger mass of cells. It also begins to release growth factors like Vascular Endothelial Growth Factor (VEGF) which further promotes neovascularization. The newly-formed blood vessels feed the tumor nutrients, and oxygen as well as transport waste materials to the outside of the tumor. In this way angiogenesis enhances cancer.

As explained by the American Medical Association, “Anti-angiogenesis is a form of targeted therapy that uses drugs or other substances to stop tumors from making new blood vessels. Without a blood supply, tumors can't grow.” Anti-angiogenesis drugs act by impeding growth of the endothelial cells inside the tumor, which, in turn prevent proliferation of the tumor.

By ensuring that cancerous cells are suppressed in their native stages, this proves to be much more effective than targeting tumor cells once formed and functional. According to the American Cancer Society, anti-angiogenesis therapy is safer than chemotherapy.

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