

Angiogenesis

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Angiogenesis:

Angiogenesis is the medical term for the formation of new blood vessels. This process occurs as part of the healing after trauma to the body, as well as during pregnancy. Angiogenesis occurs negatively as part of certain diseases such as cancer.

Angiogenesis and Cancer:

Blood vessels formed as a result of angiogenesis supply tumors with their vital life source, blood. Researchers are currently working on several different methods of cutting off this blood supply from the tumors, thereby preventing the tumors from remaining healthy and forcing them to die. Cancer cells stimulate angiogenesis by producing several substances that cause capillary cells to divide and reproduce. One method to "choke off" the tumors from their blood supply is to stop the capillary cells from dividing. Another method is to prevent normal tissue from breaking down and allowing these new blood vessels to form.

Anti-Angiogenesis:

Research has indicated that tumors produce not only substances that allow the blood vessels to form, but also substances that inhibit blood vessel formation as well. Two such substances being studied are angiostatin and endostatin. Both compounds have been shown to suppress cancers in mice, and even more dramatically so when administered together. In addition to the suppression of the cancers, no side effects were observed.

Chemo versus Anti-Angiogenesis:

Anti-angiogenesis is being researched as an alternative to chemotherapy treatment for cancers because of its many advantages. Anti-angiogenesis goes after the natural tissue of the blood vessels, an easier target than the cancer cells themselves. Cancer cells are genetically unstable, which makes them more prone to genetic mutation -- allowing them to produce drug resistant cells. Anti-angiogenic drugs are

not likely to cause bone marrow suppression, gastrointestinal symptoms, or hair loss (characteristic symptoms of standard chemotherapy treatments).

Automated Cellular Imaging System (ACIS):

Determining the density of newly formed blood vessels due to angiogenesis helps to identify particularly aggressive cancers and aids in deciding what type of therapy is required to treat the cancerous tumor. In benign tissue, blood vessels tend to be looser and occur at less density. The automated cellular imaging system (ACIS) combines color-based imaging technology with automated microscopy to increase detection sensitivity of the blood vessels. The ACIS rendering helps to accentuate blood vessels, allowing the doctor to actually count, see the size of, the density of and the roundness of the vessels. Through these observations, the doctor can then determine the best course of action in fighting the tumor.

http://biz.yahoo.com/bw/000201/ca_chromav_2.html

<http://mayohealth.org/mayo/9805/htm/angiogen.htm>

<http://www.slip.net/~mcdavis/antiangio.html>
Genetic Engineering News. "Assessing Tumor Agressiveness". 1 Oct 1999.

