

## CONTINUING EDUCATION

# Antiangiogenesis: The Fifth Cancer Treatment Modality?

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**Purpose/Objectives:** To describe the biologic process of angiogenesis and the potential role of antiangiogenesis therapy in cancer treatment.

**Data Sources:** Published articles, conference proceedings, and computerized databases.

**Data Synthesis:** Angiogenesis is the development of blood vessels. Antiangiogenic agents prevent the development of blood vessels, therefore preventing one mode of cancer metastasis. Clinical trials must be conducted to ascertain the most powerful antiangiogenic therapies. Trials combine chemotherapy, biotherapy, and radiotherapy with antiangiogenic therapy.

**Conclusions:** Information from animal studies has revealed that antiangiogenesis is a viable option in treating cancer and preventing metastasis. Although human studies are rare, preliminary results are promising, especially when antiangiogenesis is used in combination with current cancer treatment modalities.

**Implications for Nursing:** Nurses are in a unique position to teach patients about new treatments for cancer. Nurses must be knowledgeable about angiogenesis and the availability of potential antiangiogenesis agents. Nurses will be vital in collecting data in clinical trials, considering the subjective data that will be obtained.

Since the 1970s, research into the treatment of cancer has yielded numerous new modalities to combat cancer. Yet the biggest stumbling block to ensuring long-term survival is cancer metastasis. A patient with cancer is considered cured when cancer remains undetected for five or more years (van Eys, 1987). However, for some reason, over a period of time, cancer may begin to regenerate, and a patient can present with metastasis beyond that five-year period. The cause must be the result, in part, of cancer cells' ability to make their own blood supply or the stimulation of dormant micrometastasis through a process known as angiogenesis. Angiogenesis also has been implicated in the initial progression from a premalignant tumor to cancer. This article presents an overview of angiogenesis, including the regulation of angiogenesis, the process of tumor angiogenesis, and potential antiangiogenic therapy.

## Definition of Angiogenesis

Angiogenesis is defined as the development of blood vessels. Angio means related to blood vessels, and genesis means development. Angiogenesis is fundamental to the reproduction, development, and repair of blood vessels. Blood

## Key Points . . .

- ▶ Angiogenesis is the development of blood vessels.
- ▶ Tumor growth and subsequent metastasis require persistent new blood vessel growth.
- ▶ Antiangiogenic agents prevent the development of blood vessels, therefore preventing one mode of cancer metastasis.
- ▶ Clinical trials with antiangiogenic agents may be difficult to conduct because typical end points involve time to progression or clinical improvement with subjective data such as decrease in pain or no further weight loss.

## Goal for CE Enrollees:

To further enhance nurses' knowledge regarding angiogenesis.

## Objectives for CE Enrollees:

On completion of this CE, the participant will be able to

1. Describe the biologic process of angiogenesis.
2. Discuss the potential role of antiangiogenesis therapy in cancer treatment.
3. Discuss the implications for nursing practice with antiangiogenesis therapy.

vessels are formed from endothelial cells that connect to form a tubular structure to maintain blood flow and tissue perfusion. Normally, in an adult, blood vessels are formed from preexisting vessels such as capillaries through the process of angiogenesis (Volpert, 2000). This process is regulated tightly by numerous proangiogenic and antiangiogenic

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