



“बेटी बचाओ, बेटी पढ़ाओ”

JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR
FACULTY OF PHYSIOTHERAPY & DIAGNOSTICS

Faculty Name : JV'n Ankita
Program : M.Sc. Zoology 3rd Semester
Course Name : Cancer & Radiation biology
Topic Name : TUMOR ANGIOGENESIS

Program Outcome-It plays an important role in health sector, provides knowledge about the treatment of patient by the help of physiotherapy.

Course Outcome- Understand the fundamentals and basic physics which is used or responsible for the imaging process in medical sector and how to do the image interpretation.

Academic Day starts with –Greeting with saying ‘**Namaste**’ by joining Hands together following by 2-3 Minutes Happy session, Celebrating birthday of any student of respective class and **National Anthem**.

Review of previous Session- **Mechanism of Metastasis**

Today We will discuss about- **TUMOR ANGIOGENESIS**

Lesson deliverance (ICT, Diagrams & Live Example)- ICT, Diagrams

➤ Diagrams

Introduction & Brief Discussion

TUMOR ANGIOGENESIS :-

Tumor angiogenesis is the process by which new blood vessels are formed to supply a growing tumor with oxygen and nutrients. This process is a crucial step in the progression of many solid tumors and is a hallmark of cancer. Without angiogenesis, tumors would not be able to grow beyond a certain size, and their ability to metastasize would be limited. Understanding tumor angiogenesis has led to the development of anti-angiogenic therapies aimed at disrupting this process and inhibiting tumor growth.

Here are some key points about tumor angiogenesis:

Angiogenic Switch: Tumors can remain dormant for a long time, but when they reach a certain size, they often undergo what is called an "angiogenic switch." This switch is triggered by factors like hypoxia (low oxygen levels) and results in the release of pro-angiogenic signals.

Pro-Angiogenic Factors: Tumor cells release various pro-angiogenic factors, such as vascular endothelial growth factor (VEGF), fibroblast growth factor (FGF), and platelet-derived growth factor (PDGF). These factors stimulate nearby blood vessels to grow and infiltrate the tumor.

Endothelial Cells: The lining of blood vessels is made up of endothelial cells. These cells proliferate and migrate under the influence of pro-angiogenic factors, forming new capillaries near the tumor.

Tumor Vasculature: The newly formed blood vessels in and around the tumor are often disorganized, leaky, and inefficient. They lack the normal hierarchical structure seen in healthy tissues.

Microenvironment: The tumor microenvironment plays a significant role in angiogenesis. Factors like inflammation, immune cells, and the extracellular matrix can either promote or inhibit the formation of new blood vessels.

Therapeutic Target: Anti-angiogenic therapies have been developed to disrupt tumor angiogenesis. These treatments target the pro-angiogenic factors or the endothelial cells involved in vessel formation. Drugs that inhibit VEGF, such as bevacizumab, are commonly used in cancer treatment.

Challenges: While anti-angiogenic therapies have shown promise, they are not always curative. Tumors can develop resistance to these treatments, and the normalization of tumor blood vessels may be a more effective approach to improving drug delivery to the tumor.

Understanding the mechanisms of tumor angiogenesis is crucial for the development of new cancer therapies and for the management of cancer patients. It has led to significant advancements in the field of oncology and is an important area of ongoing research.

University Library Reference-

➤ Textbook of Radiology for Residents and Technicians by S. K. BHARGAVA

- Suggestions to secure good marks to answer in exam-
 - Explain answer with key point of the answers

Questions to check understanding level of students-

- WHAT DO YOU MEAN BY TUMOR ANGIOGENESIS ?
- WHAT DO YOU MEAN BY MICROENVIRONMENT ?

- Next Topic- **CANCER STAGING.**
- National song 'Vande Mataram'.