



Angiogenesis and it's Vital Function in Healing of Wounds

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ABSTRACT

Angiogenesis is the process by which new blood vessels are formed, allowing the supply of oxygen and nutrients to the tissues of the body. It is an important function required for growth, development and wound healing. However, it also plays an important role in the development of cancer because, like other parts of the body, the tumor requires a blood supply for it to thrive and grow.

Physiological angiogenesis plays a vital role during embryonic development and later, in adult life, in the female reproductive tract in the ovary and in the uterus, for a few days every month. Angiogenesis in a wound is similarly short lived, usually lives not more than 2 weeks. Therefore, two hallmarks of physiological angiogenesis are its brevity, and that many of the new capillary blood vessels either will regress or will go on to become 'established' micro vessels.

Keywords: Endothelial cells; Tumor cells; Blood vessels

DESCRIPTION

Angiogenesis is an important step in the transition of a tumor to a life-threatening malignant tumor (cancer). When tumor cells reach this junction, they call proteins that stimulate the growth of capillaries and develop their own ability to synthesize proteins with this ability. Vascular endothelial factor encourages endothelial cells (a component of capillaries) to invade tumor nodules and initiate the developmental process of capillaries. When endothelial cells divide, they secrete growth factors that stimulate the growth or motility of tumor cells. Therefore, endothelial cells and tumor cells stimulate each other.

Study design

The mature micro vessels contain quiescent endothelial cells that rest on an intact basement membrane and embedded in this basement membrane are pericytes. Thus, established micro vessels have a slightly thicker wall than growing vessels. In growing micro vessels, the basement membrane is disrupted and pericytes are sparse or absent.

Tumor formation occurs in Pathological angiogenesis and in chronic inflammation, and persists for months or years.

Macrophages are primarily known as phagocytic innate immune

cells, but are, in fact, highly dynamic multitasks that interact with many different tissue types and have regulatory roles in development, homeostasis, tissue repair, and disease. In all of these scenarios angiogenesis is pivotal and macrophages appear to play a key role in guiding both blood vessel sprouting and remodeling wherever that occurs. Recent studies have explored these processes in a diverse range of models utilizing the complementary strengths of rodent, fish and tissue culture studies to the mechanisms underlying these interactions and regulatory functions. we discuss how macrophages regulate angiogenesis and its resolution as embryonic tissues grow, as well as their parallel and different functions in repairing wounds and in pathologies, with a focus on chronic wounds and cancer.

CONCLUSION

Angiogenesis is the process of forming new blood vessels and is necessary to support the healing of the wound environment. After injury, activated endothelial cells break down the basement membrane of the posterior veins of the capillaries, allowing the cells to move across this gap. The division of these migrating endothelial cells results in the formation of renal tubules or lumens. Eventually, basement membrane deposition occurs, leading to the maturation of capillaries. Loss of this control can result in too much or too little angiogenesis

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Received: 28-Dec-2021, Manuscript No. BOM-22-43625; **Editor assigned:** 31-Dec-2021, Pre QC No. BOM-22-43625 (PQ); **Reviewed:** 14-Jan-2022, QC No. BOM-22-43625; **Revised:** 19-Jan-2022, Manuscript No. BOM-22-43625(R); **Published:** 26-Jan-2022, DOI: 10.35248/2167-7956.22.11.195.

Citation: Martin D (2022) Angiogenesis and it's Vital Function in Healing of Wounds. J Biomol Res Ther. 11:195.

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