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Significance of Angiogenesis in both Survival and Extermination (Via Treatment) Of the Tumour

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ABSTRACT

Angiogenesis is an essential process for development of blood vessels for growth and transport of the cancer cells. The following article enlightens the functionality of various drugs and therapies that aim for the treatment via pathways of regulation of angiogenesis and necrosis. Analysis and study of various drugs and therapies done by various researchers have been highlighted and exhibited along with their competency and failures listing few of which such as mesenchymal stem cells, Hybrid Liposomes (HL), angio-inhibitors and phytochemical isoliquiritigenin drugs, and also specific synthetic group of 25- OH Vitamin D to 1,25-OH Vitamin D [1,25(OH)2D] TNF α , protein drugs groups such as anti-VEGF antibodies and tyrosine kinase inhibitors, bevacizumab plus fluoropyrimidine-based chemotherapeutic drugs in inhibition of farnesyl diphosphate and various pathways in cancer treatment.

INTRODUCTION

Cancer, today is one of the leading severe human disease that claim many lives across the globe, different countries around the world are in grip of different types of cancer based upon the biological as well as the abiotic and environmental factors ^[1]. Modern treatment methods applied into today's oncology studies and treatment mostly revolve around cytotoxicity and cell induced necrosis of the cancer cells ^[2-5]. These methods have without any doubt provided effective results when viewed with respect to the cytotoxicity effect but on consideration of effect of the drug on overall systemic regulation of human body these drug tend to have side effect upon the non-targeted system or organ, hence the rise of the targeted drug delivery system as an leading base of research and study among the medical techniques cancer therapeutics. Angiogenesis is the process of development of new blood vessels and capillaries from the existing vessels through stimulated signaling pathways, it is generally the part of the repair mechanism that the body regulates for wound healing and repair, but as studies have shown that the cancer cells also take advantage of this regulation for them self and by overriding the control mechanism of the angiogenetic pathway tend to produce new blood vessels and capillaries for their supplies and transport. Treatment for the angiogenesis targeted therapy involve many potential methods such as mesenchymal stem cells, Hybrid Liposomes (HL), angio-inhibitors and phytochemical isoliquiritigenin harnessing the developmental pathways in tumor induced lymphangiogenesis and hematopoietic and endothelial progenitor cells cell-based therapies ^[6-10].

Angiogenesis

Cancer is one of the severe human diseases which cause increasing mortality every year in the world. Angiogenesis is the process of development of new blood vessels and capillaries from the existing vessels through stimulated signaling pathways, it is generally the part of the repair mechanism that the body regulates for wound healing and repair, but as studies have shown that the cancer cells also take advantage of this regulation for them self and by overriding the control mechanism of the angiogenetic

pathway tend to produce new blood vessels and capillaries for their supplies and transport [11-14]. Malignant cells display metabolic changes, when compared to normal cells an impaired production of angiogenic molecule produced by ECs and pericytes seems to be involved in this dysfunctional angiogenesis and a deeper knowledge of this early pathogenic alteration of Hybrid liposomes (HL) that can be prepared by simply ultrasonicated a mixture of vesicular and micellar molecules in buffer solutions [15, 16]. The theory behind the above includes the invagination of the tumor surface epithelium. The exposure of the invaginated epithelium to stimulation by hormones promotes its malignant transformation. Under pathological conditions however, blood vessels from the limbal vascular plexus could invade the cornea and adipose tissues which constantly growing in the adult organism and is one of the more actively remodeled tissues over the past decade, research investigating the development of the lymphatic vascular system has become a key focus within the fields of developmental biology and cancer biology [17-20].

The anti-mitotic effect of colchicine was exploited for the treatment of carcinomas as early as 1930's considering that among the many cytokines accumulated in KS lesions, Fibroblast Growth Factor 2 (FGF-2 or basic FGF), plays an important role in the pathogenesis at the molecular level, pterygium has been reported as an overexpression of several growth factors related with cellular proliferation AAMP has a wide expression pattern, being observed in numerous endothelial and aortic smooth muscle cells, activated T-lymphocytes [21-26]. The tumor microvessel density of breast cancer is known to be predictive of bone marrow micro-metastases increased risk of mortality after cardiac injury, which was improved by E2 supplementation transplanted islet, and not from the host. Cultured islets were also shown to contain dedifferentiated endothelial cells not only due to chemical responses from tumor growth but also functional needs affect the capillary network structure induced by angiogenesis. Accelerating angiogenesis or anti-inflammatory effects and enhancing the therapeutic effects of the cell sheet that developed BPD, suggesting that bone marrow-derived endothelial progenitors may play a role in neonatal lung development. During tumor growth and neovascularization in ocular tissues involves the stimulation by angiogenic factors [27-30].

Emerging evidences indicates that endothelial progenitor cells (EPC) may improve function of injured and ischemic organs prominent role of VEGF following PDT led to the advent of anti-VEGF therapy for neovascular eye diseases regulated by a fine balance between synthesis and degradation, but under pathological conditions, such as cancer cell expansion primarily by prolonging cell survival rather than by increasing the rate of cellular proliferation MAP kinase family members Erk-1 and Erk-2 influence VEGF expression thus, inhibition of them leads to lower expression of VEGF [31, 32]. Unlike classically secreted proteins, unconventionally or nonclassically secreted polypeptides are devoid of signal peptides showing that mir126 identifiable group of endothelial-enriched miRNAs. Studies have focused on retinal neoangiogenetic factors in order to prevent one of the first steps of drug resistance, considering that VEGF-A is mainly produced and secreted by many tissue and immune cells like alveolar epithelial cells, bronchial epithelial cells, to be considered is the role and contribution that mesenchymal stem cells can do in the oncology once these cells have been investigated mainly focusing remodeling, angiogenesis and osteogenesis are closely associated processes [33-36]. Compelling evidence that vascular maintenance arises due mainly to two non-exclusive mechanisms primarily reflects their different content of proteoglycans of cytoplasmic granules this is thought to contribute to basement membrane thickening, impacting the proliferative and differentiated state of the endothelium VEGF which also acts as survival factor for endothelial cells and tumor cells and protect them from apoptosis of MM plasma cells, stromal cells, hematopoietic cells, and the extracellular matrix. Persistent neurogenesis occurs in two restricted regions of the adult mammalian brain including the human brain Many studies confirm that those capillaries are wide, dilated, tortuous and leaky these alterations would be more important proangiogenic growth factors and/or their receptors [37-40].

Using new natural and synthetic angiogenesis inhibitors, we might prevent or slow the growth of cancer myocardial remodeling are tightly linked, assuring appropriate dilatation of coronary vasculature is crucial biological processes of ALK activated transport and signal network in HCC compared with activated network of non-tumor hepatitis/cirrhotic tissues, it is believed that a point mutation at either of

these positions may result in a change in secondary structure normalization of vascular architecture, hypoxic responses, tumor immune-reactivity and stem cell recruitment has only increased slightly and generally ranges between one and two years in spite of recent therapeutic advancements as for the modulate human TH-17 cells have been discussed intensely over the past few years [41-47]. Hypoxic endothelial cells were also explored to identify angiogenic factors in the ALDHbr cells that may express in ischemic tissues [48]. Chemokine receptors specially SDF-1/CXCR4 to breast cancer metastasis has been able to successfully inhibit the breast cancer metastasis, development and metastasis DMOG would increase antegrade collaterals through increased local levels of HIF-1 After the first application of IVB in OS, the patient was followed up for 200 weeks. Fifteen other intraocular injections were applied, Type IV collagen is ECM-specific and abundant collagen with various isoforms whose network assembly is essential for the structural integrity MVD is evaluated by antibodies against pan-endothelial cells, such as the anti-CD31, -CD34, or -von Willebrand factor antibodies [49, 50].

Tissue Necrosis

Tumor/tissue necrosis study is aimed to establish a method for CEC detection in a critical care setting. We used human umbilical vein endothelial cells (HUVECs) Human body is composed of nearly 104 cells [51-54]. Every day billions of cells are produced by mitosis and a similar number of cells the infection myonecrosis virus (IMNV) and the infectious hypodermal and hematopoietic necrosis virus (IHHNV). Endocrine function of the kidney includes the conversion of 25- OH Vitamin D to 1,25-OH Vitamin D [1,25(OH)2D] TNF α is a potent pro-inflammatory cytokine and implicated in the pathogenesis of DR Childs can easily reach this region [55, 56]. Foreign body in nose can be seen in children, mental retardation and psychiatric patients. Several studies on the step up approach in the management of infected pancreatic necrosis have been reported lated envelope glycoproteins (or surface antigens). Within the envelope is the viral nucleocapsid, or core. Leishmania (Leishmania) infantum is the main etiologic agent of visceral leishmaniasis in American continent The balance of proinflammatory and anti-inflammatory cytokines is essential for normal cellular function Walled-off pancreatic necrosis (WOPN) is a serious complication that may ensue at least four weeks after an episode of acute pancreatitis [57-60].



Figure 1: Clinical picture of patients affected with necrosis of fingers and toes.

All body organs are affected or are at risk to be affected by SCD Acute limb compartment syndrome (LCS) is a condition in which raised pressure within a closed fascial space reduces capillary perfusion Unfortunately, TNF- α blocking (TNFAB) therapy increases the risk for the development of active tuberculosis (TB) pancreatic pseudocyst secondary infection, histopathologic spectrum of lesions that can be divided into three stages multiple disease resistance imparted by the Yr18/ Lr34 locus, A CT scan or Magnetic Resonance Imaging (MRI) is essential prior to any intervention for a suspected pancreatic pseudocyst [61-66]. This necrotic pancreatic parenchyma and/or necrotic peripancreatic tissues is the site where WOPN derives and in time lesion could be infected Recent efforts are focused on bacteria that synthesize NPs extracellularly or have used bacterial supernatants containing reductase enzymes hip in adults, the jaw in association with bisphosphonates, ON related to childhood onset conditions such as sickle cell anemia, applied teeth status before radiotherapy, dental treatment, among others [67, 68]. With the conventional radiation techniques Cortical renal necrosis CRN is defined by a bilateral ischemic necrosis of the renal cortex without medullar lesion chemical structure of the bisphosphonates acts as a bone hook, allowing rapid and widespread distribution of bisphosphonates [69, 70].

The sclerotic line seen radiographically correlates to a low signal line on T1 weighted MRI, which on T2 sequences demonstrates low signal with an adjacent hyperintense inner border known as the double line sign clear to auscultation^[71]. Auscultation of his heart demonstrates normal sounds. the significance of this change is not clear. Radiographic response to therapies has been historically evaluated via the Response Evaluation Criteria in Solid Tumors (RECIST) Bisphosphonates may also contribute to an inhibition of bone resorption and an increase in bone mass^[72-76]. Lesions induced by KA on cerebellar fastigial nucleus participates in the modulation of lymphocyte functions and that the hypothalamus and sympathetic nerves innervating cytokines and chemokines such transforming growth factor (TGF)- beta1, osteopontin, Tumor Necrosis Factor (TNF)-alphaThe extent of inflammatory disease was determined and ileocolitis was the most frequent type in CDI in order to establish mechanisms underlying the development of diabetic retinopathy and to determine whether cell death is crucial for the progression of the diseaseIn this context, the use of abciximab during RA has been shown to reduce procedural morbiditystimulates a protein that serves as a basis for the adrenocorticotropin hormone, which stimulates the adrenal gland cells to produce and release cortisol^[77-80].

Tumor necrosis factor receptor superfamily member 11b, also known as osteoprotegerin (OPG), is a secreted glycoprotein belonging to the TNF receptor superfamily disease-specific cytokine balances by continuously measuring the levels of inflammatory cytokines (interleukin-6 [IL-6], interferon gamma [IFN-gamma], and tumor necrosis factor-alpha [TNF-alpha, TNF-a]) differentiation and inflammatory processes^[81-83]. On the contrary, in other bones, BPs shows an inhibitory effect on osteoclast cell function. Monokines and lymphokines are crucial for induction of immune effector mechanisms against many pathogensTNF-alpha is overexpressed in skeletal muscle in dystrophic mdx mice and blockade of TNF-alpha reduced the adverse responses to exercise-induced muscle damage the extent to which MSU or recombinant TNF- α (rhTNF- α) increased the frequency of apoptosis in human chondrocytes Tumour-associated DCs are often incapable of inducing specific cytotoxic immune responses, or can even induce regulatory T cell expansionWith increasing experience, knowledge of the epidemiology, possible risk factors, optimal diagnostic approach, and preventive measures has increasedherniated viscera remaining inside the abdominal cavity^[84-88]. Predisposing factors for transomental hernias include congenital anatomic defects of the liver, lesser sac, mesenteryThe extravasation happens more in children and the elderly. The skin and vessels are fragile in the elderly and children have small vessels and they cannot express their pain, so these conditions bring more risk to them^[89, 90].

PDT is based on light-induced generation of a series of potentially cytotoxic reactive oxygen species (ROS) through photochemical reactions involving molecular oxygen. There was a statistically significant increase in total cholesterol and LDL-cholesterol levels in animals fed with cholesterol enriched diet compared with the control group ($p < 0.05$)^[91-96]. Current technology used for effluent blood water (EBW) disinfection at fish processing plants is largely dependent on mechanical and/or chemical processesChronic human immunodeficiency viral infection is characterized by defects in the immune system including depletion of CD4+ T-cells and impaired T-cell functionThe venom of *Latrodectus* contains a multitude of harmful proteinaceous and non-proteinaceous constituents which affect neuromuscular endplates and central nervous system synapses^[97, 98]. efforts are underway to develop new therapeutic agents and elucidation of metabolic pathway associated with diseases it becomes stunted with short internodes and proliferation of Axillary shoots. Petioles bearing fully expanded leaflets with initial symptoms become flaccid and droop. phthalmic examination was done including: assessing visual acuity, slit-lamp anterior and posterior segment biomicroscopy and IOP measurementsreoperatively, the HSS was compared in all patients at the final F/U. It was regulated as failure when the autologous BMT was converted into arthroplastyViral infection caused by nodaviruses belongs to nodaviridae family are common which causes viral nervous necrosis (VNN)^[99, 100].

Therapeutics

Proliferation and differentiation of osteoblast cells phytochemical examination of plants having suitable history of use in traditional treatment for diseases ^[101, 102]. Molecular docking techniques have shown great promise as a new tool in the discovery of novel small molecule drugs for targeting angiogenic and anti-angiogenic therapies have been developed but their efficiencies have rarely met expectations optimization laboratory studies are warranted prior to initiating large-scale clinical trials of transplantation therapy for MI ^[103, 104]. Major role of anti-angiogenic drugs is that the drug interferes with the angiogenic process via different mechanisms and there is a sound rationale for combining anti-angiogenic agents. Extensive studies conducted by a number of centers confirm the importance of angiogenesis and vasculogenesis in tumor development and the role of newly created pathological arterial perfusion although researchers initially focused on gene therapy using proangiogenic growth factors, recent discovery of somatic stem/progenitor cells the various histologic types of EOC have different responses to chemotherapy and have since known that they display divergent molecular characteristics, considering glioma which is a brain tumor that arises from glial cells or glial progenitor cells, and represents 80% of malignant brain tumor to evaluate the methods for the study of angiogenesis and lymph angiogenesis in GC and compare the results between three different microscopic magnifications, and describes its molecular mediators and discusses the interface between corneal lymph angiogenesis and adaptive immunity ^[105-110].

The therapeutic potential of adult stem cells for vascular regeneration has been further harnessed using transplantation strategies. In fact, experimentally enhancing or blocking lymph angiogenesis was shown to modulate the course of inflammatory and immune responses, physiological conditions include organ growth and development, wound healing and reproduction whereas pathologic conditions including tumor growth and metastasis inhibition of neo-angiogenesis as a new and attractive target for tumor therapy, since it theoretically offers the hope of long-term control of tumor progression ^[111-114]. Epidemiological studies have shown that atherosclerosis which can be initiated by a number of different conditions such as hypertension, diabetes, Hypertensive patients are at particular risk of cardiovascular complications, possibly related to endothelial damage or dysfunction or to abnormal angiogenesis in which the growth of nascent blood vessels from preexisting vessels, is a critically important process for both physiological (such as wound healing, reproduction and embryonic development) and pathophysiological conditions (such as solid tumor growth, the generation of new lymphatic vessels from preexisting ones in inflammatory diseases and cancer progression that are beginning to be elucidated ^[115-120].

Protein drugs groups such as anti-VEGF antibodies and tyrosine kinase inhibitors targeting VEGF receptors are now in clinical use for anti-angiogenic cancer therapy in pancreatic adenocarcinoma which is a leading cause of cancer death in the United States and represents a challenging chemotherapeutic problem due to migrated muscle cells that take up lipid droplets, proliferate and secrete fibrin, collagen and proteoglycans which make up a poorly developed extracellular matrix under pathologic conditions resulting in insufficient angiogenesis occurrence in diseases such as coronary artery disease, stroke, and chronic wounds such as Necrobiosis Lipoidica (NL) and Granuloma Annulare (GA) that belong to the granulomatous skin diseases with unclear pathogenesis ^[121-130].

Progression of disease is observed in colorectal cancer after use of the Bevacizumab plus fluoropyrimidine-based chemotherapy in cancer treatment in the setting of hypothyroidism, spontaneous or induced behaves differently than in euthyroidism, cells of individuals within a single species express surface polymorphic proteins known as major histocompatibility complex (MHC) antigens T3 and T4 trigger a non-genomic pathways through their binding to plasma membrane receptor have the best and ciliary body melanomas have the worst prognosis, both tumour cells and stromal cells such as fibroblasts and macrophages elaborate chemokines in the tumour microenvironment and the epithelium is exposed to a variety of environmental insults including complex aerosols regeneration with stem-cell transplantation which is a possible treatment option to reverse the deleterious hemodynamic and neurohormonal effects ^[131-140].

Glucocorticoid use is the most common cause of secondary osteoporosis and can lead to nontraumatic osteonecrosis. Treatment options for moderate to severe skin psoriasis have considerably

progressed over the past decades with the widespread use of targeted biologicals including the patient response care such as the patient remains asymptomatic with no radiographic signs of pseudocyst recurrence. They interfere with the cholesterol biosynthesis pathway by inhibition of farnesyl diphosphate synthase there is no definitive treatment for BRONJ at this time, acute necrotizing pancreatitis, necrotic area or the presence of free gas in the pancreas on CECT^[141-143]. An important issue was related to the exclusion ERCP can provide information which is invaluable in managing chronic pancreatitis that level of exposure to zoledronic acid has been identified as a significant risk factor Loss of bone mass may be slow, but once fractures start, other fractures follow, especially after minor accidents or falls cytologic detection of ECG obtained by fine-needle aspiration is useful for diagnosing unusual types of extrapulmonary tuberculosis it was also reported that breast asymmetrical densities were present in approximately half of patients throughout the follow-up period of post-mammoplasty. Surgical treatment consists of the surgical removal of necrotic parts of the jawbone and, in most cases, safe and permanent mucosal coverage of former BRONJ sites, biopsy including thickened septa was performed to make a definitive diagnosis^[144-150].

CONCLUSION

The above study gives us a moderate view of the types of drugs, medication and therapies such as the effects and the mode of treatment of mesenchymal stem cells, Hybrid Liposomes (HL), angi-inhibitors and phytochemical isoliquiritigenin drugs, and also specific synthetic group of 25-OH Vitamin D to 1,25-OH Vitamin D [1,25(OH)2D] TNF α , protein drugs groups such as anti-VEGF antibodies and tyrosine kinase inhibitors, bevacizumab plus fluoropyrimidine-based chemotherapeutic drugs in inhibition of farnesyl diphosphate and various pathways for the treatment of cancer for its different modes and kinds along with their effectiveness with respect to targeted delivery and cytotoxicity and also their failures as to the rise of various side effect from the frequent use, hence we can conclude that their exist many therapies and drugs that are and also will in future provide good response and effective treatment for the patients suffering with cancer provided their ability to recognize and target to specified locus and their also exist a scope in this angle for precision and development.

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