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A Review on Bevacizumab: An Anti-Cancer Drug

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Review Article

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ABSTRACT

Cancer is one of the most wide spread diseases. Now-a-days, due to the advanced technologies drug for different kinds of cancer are available in the market. Bevacizumab (Avastin) is a one of the well-known anti-cancer drug which is used for different kinds of cancer. Bevacizumab (Avastin) interferes with growth of the cancerous cells. It is a humanized monoclonal antibody drug which blocks angiogenesis by inhibiting Vascular Endothelial Growth Factor A (VEGF-A). Researchers have shown the advantages of this drug in metastatic breast cancer, in blindness, ovarian cancer and many more. Before using this drug, patient should consult to the doctor and should be aware of its side effects in the future.

INTRODUCTION

Bevacizumab categorized as a "monoclonal antibody" and "anti-angiogenesis" drug that inhibits the development of new blood vessels (angiogenesis) [1-5]. Some angiogenesis inhibitors are endogenous and others are acquired exogenously through pharmaceutical drugs or food plan [6-10]. Bevacizumab blocks angiogenesis with the aid of inhibiting Vascular Endothelial Growth Factor A (VEGF-A). VEGF-A is a signaling protein which is responsible for the growth of new blood vessels. Mostly, this protein will supply blood to those cells and tissues which are deprived of oxygenated blood due to compromised blood circulation. VEGF-A plays a major role in rheumatoid arthritis, diabetic retinopathy, breast cancer [11-14].

Few problems have also been identified with VEGF-A. Overexpression of VEGF-A is responsible for the development of many diseases. For example, those tumors which can express VEGF-A can continue growing beyond their size limit because of VEGF-A property that they can develop this enhanced blood supply that is angiogenesis. Bevacizumab used to be the first clinically on hand angiogenesis inhibitor in the US. This medication is an artificial antibody (IgG1) used to treat kidney, cervical, ovarian, colon, and rectal melanoma [15-20]. Bevacizumab can be used to treat lung melanoma (non-small cell sort), detailed forms of brain tumors, and melanoma observed within the fallopian tube or lining of the belly wall (peritoneal) [21-24]. It was firstly permitted by the food and Drug Administration (FDA) as a remedy for different forms of cancer. Its use to treat eye disorder is viewed as an “off-label” use [25-30]. On 14th November, 2014 FDA permits the use of medicines for the treatment of cancer [31-35].

MEDICAL USES OF BEVACIZUMAB

- Bevacizumab can be used in combination with chemotherapy routine in fallopian tube and primary peritoneal cancer. FDA approved the intravenous infusion of the solution of this drug with other drug like paclitaxel, topotecan.
- Cure for non-squamous, non-small lung melanoma along with the combination of carboplatin/paclitaxel chemotherapy. The approval of taking this drug is solely depends upon the study which had done. Study showed a 2 month improvement in overall survival in patients who are treated with Bevacizumab [36-41].
- Remedy of metastatic breast melanoma used as part of a blend chemotherapy regimen.
- Healing of glioblastoma (GBM).
- Bevacizumab was once approved by the FDA in February 2004 for use in metastatic colorectal cancer when used with common chemotherapy treatment (as first-line cure) and with 5-fluorouracil-based healing for 2nd-line metastatic colorectal cancer. Bevacizumab has additionally been examined as an add on to

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other chemotherapy medications in men and women with non-metastatic colon cancer undergoing surgical removing [42-46]. It was authorized for use in colorectal cancer in 2005.

- Bevacizumab has recently been utilized by ophthalmologists in an off-label use as an intravitreal agent within the therapy of proliferative (neovascular) eye illnesses, mainly for choroidal neovascular membrane (CNV) [47-52]. Despite the fact that not currently authorized through the FDA for such use, the injection of 1.25-2.5 mg of bevacizumab into the vitreous cavity has been carried out without enormous intraocular toxicity [53-57]. Many retina professionals have noted spectacular outcome in the atmosphere of CNV, proliferative diabetic retinopathy, neovascular glaucoma, and diabetic macular oedema, retinopathy of prematurity and macular oedema secondary to retinal vein occlusions [58-63].
- Avastin is given directly into the bloodstream that is intravenously. The principal measurement is given more than an hour and a half [64-69]. The first dose of bevacizumab is given over 90 minutes. The measure of Bevacizumab depends upon physical make-up which will relies upon numerous clarifications, including pinnacle and weight, regular prosperity or diverse medical issues and the kind of melanoma or circumstance being managed. Human services supplier will check concerning the measurement [70-75].

SIDE EFFECTS

- Results are usually predictable in terms of their onset and duration.
- Side effects can go away after the treatment i.e. results can be reversible. There is no relationship between the presence or severity of side effects and the effectiveness of the treatment [76-81].
- There is not any knowledge as to the frequency of adverse reactions that could be attributed to Bevacizumab alone. (In clinical stories Bevacizumab used to be utilized in combination with other chemotherapy medicines).
- The following effects are common (occurring in greater than 30%) for patients taking Bevacizumab.
- Generalized weak spot, soreness, stomach affliction, Nausea & vomiting, negative appetite, Constipation, upper respiratory illness, low white blood cell depend (this will put patient at accelerated threat for contamination), Proteinuria, nose bleed, numbness, diarrheal, hair loss, mouth sores, loss of fertility, watery eyes, headache [82-85].
- Rare side effects are: Reversible Posterior Leucoencephalopathy Syndrome (RPLS) following these symptoms headaches, seizures, confusion, eye sight problems, excessive sleep, change in behavior, chances of getting high blood pressure.
- Osteonecrosis that is damage to the teeth and jawbone.
- Chances of having severe bleeding (hemorrhage).
- Nephrotic syndrome: condition which is recognized by high levels of protein in the urine, low level of protein in the blood, swelling around the eyes especially [86-90].
- Patients who have received radiation therapy to the chest wall are at the risk of getting congestive heart failure.
- Some delayed effects are also related to the Bevacizumab therapy for example disruption in normal menstrual cycle and can also cause infertility.
- Bevacizumab may cause a hole in the wall of stomach or intestine which can be a life threatening condition. Consult to the doctor immediately if suffering from stomach pain, fever, constipation.
- Sometimes because of this therapy there may be chances of having delay in the wound healing such as some cuts made by doctor during the surgery. Wounds which are closed may have chance of open up again.

PRECAUTION

- Before beginning Bevacizumab treatment, patient should inform the health practitioner about different remedy as he/she is having (including prescription, over-the-counter, nutrition, herbal cures, etc.).
- Do not receive any kind of immunization or vaccination without medical professional's approval even as taking Bevacizumab.

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- Inform health practitioner if you're pregnant or could also be pregnant previous to opening this medication. Pregnancy category C (use of Bevacizumab during being pregnant can be dangerous to the fetus). Information has shown that Bevacizumab may damage your unborn child. Taking Bevacizumab could cause a girl's ovaries to discontinue working and could impair her capacity to have children [91-95].
- For both men and women: do not conceive a child (get pregnant) whilst taking Bevacizumab. Barrier methods of contraception, reminiscent of condoms, are advocated. Consult with your healthcare professional when to get pregnant or conceive a baby after remedy/treatment only.
- Don't breastfeed during uptake of Bevacizumab.
- Consult to the health care professional first before undergoing any surgical procedure. Bevacizumab must no longer be used for 28 days before or after surgery and until surgical wounds are utterly healed [96-100].
- Patient should also know about the self-care tips for example:
- Maintain good nutrition and get plenty of rest.
- Avoid sun as long as you can, or else wear sun screen.
- Drink plenty of water at least two or three quarts of fluid every 24 hours.
- Try not to drink any alcoholic beverages.
- To avoid mouth sores, keep good hygiene of mouth. If possible use baking soda and rinse with it thrice in a day.

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