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Bevacizumab in Oncology: Boon or Bane

Niyati Sanghavi[1] Krunal Shah[2]

[1] Department of Medical Oncology, Healthcare Global Hospital, Bengaluru, Karnataka, India
[2] Department of Pediatric Oncology, Kidwai Memorial Institute, Bengaluru, Karnataka, India

Address for correspondence Niyati Sanghavi, MBBS, DNB, Department of Medical Oncology, Healthcare Global Hospital, Bangalore, India (e-mail: niyati_sanghavi@hotmail.com).

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Bevacizumab is a recombinant humanized monoclonal antibody against vascular endothelial growth factors (VEGF). It blocks the angiogenic molecule VEGF, thereby inhibiting tumor angiogenesis. It is approved for a range of solid cancers such as ovarian cancer, colorectal cancer, glioblastoma multiforme, advanced non-squamous non-small cell lung cancer (NSCLC), cervical cancer, renal cell carcinoma, and metastatic breast cancer.

This is in response to the study titled "Real-World Experience in Toxicity with Bevacizumab in Indian Cancer Patients." The authors Patil et al. (2021) conducted a retrospective study on 41 patients with various cancers, who had received bevacizumab with or without chemotherapy. In their study, the incidence of arterial thrombus and hemorrhage was 2% and 10% respectively, whereas the incidence of congestive heart failure and subacute intestinal obstruction was found in 5% of patients.[1] The efficacy of the use of bevacizumab was not evaluated in this study.

Bevacizumab was first approved for metastatic colorectal cancer in combination with chemotherapy. The pivotal clinical trial for the drug in colorectal cancer in a first-line setting was conducted by Hurwitz et al (2004)[2] and Saltz et al (2008)[3] and showed a modest clinical benefit ranging from 3 to 5 months. In the case of NSCLC, the study done by Sandler et al[4] showed an overall survival benefit of merely 2 months; however, the AVAiL study[5] failed to show any benefit in overall survival. For the remaining treatment applications of bevacizumab: metastatic breast cancer, renal cell carcinoma, and glioblastoma multiforme, various clinical trials have failed to show a significant benefit in overall survival.

The benefit noted in progression-free survival has failed to translate into any benefit in overall survival. In the setting of ovarian cancers, GOG-0213 was the only clinical trial to show a benefit in overall survival, whereas other trials such as AURELIA and OCEANS failed to do the same.[6]

Bevacizumab has a range of side effects such as hypertension, proteinuria, intestinal obstruction or perforation, bleeding, thromboembolism, delayed wound healing post-surgery, diarrhea, fatigue, and asthenia. Bevacizumab is also contraindicated in pregnancy given post-marketing reports of embryonal malformations. The other less-frequent side effects include congestive heart failure, posterior reversible encephalopathy, fistulae formation, hypersensitivity reactions, osteonecrosis of the jaw, and increased rates of infections. The highest incidence of potentially serious GI perforations ranged up to 9.2% in colon cancers. The risk of hemorrhage has been reported up to 44.2 % in NSCLC.[6] These are fatal complications that can be potentially life-threatening in patients treated with bevacizumab.

Keeping in mind the various significant side effects and minimal survival benefits, patients for bevacizumab should be selected carefully by an oncologist after weighing both the risks and benefits. It should not be recommended if the risk-to-benefit ratio is moderate or high for a particular patient upon examination and checking their medical history.

Conflict of Interest
None declared.

References

1 Patil PP, Rangaraju RR, Abbas W, Garg S. Real-world experience in toxicity with bevacizumab in Indian cancer patients. South Asian J Cancer 2021;10(02):131–134
2 Hurwitz H, Fehrenbacher L, Novotny W, et al. Bevacizumab plus irinotecan, fluorouracil, and leucovorin for metastatic colorectal cancer. N Engl J Med 2004;350(23):2335–2342

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ISSN 0971-5851.

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3 Saltz LB, Clarke S, Díaz-Rubio E, et al. Bevacizumab in combination with oxaliplatin-based chemotherapy as first-line therapy in metastatic colorectal cancer: a randomized phase III study. J Clin Oncol 2008;26(12):2013–2019
4 Sandler AB. Molecular targeted agents in non-small-cell lung cancer. Clin Lung Cancer 2003;5(Suppl 1):S22–S28
5 Reck M, von Pawel J, Zatloukal P, et al. Phase III trial of cisplatin plus gemcitabine with either placebo or bevacizumab as first-line therapy for nonsquamous non-small-cell lung cancer: AVAil. J Clin Oncol 2009;27(08):1227–1234
6 Garcia J, Hurwitz HI, Sandler AB, et al. Bevacizumab (Avastin®) in cancer treatment: A review of 15 years of clinical experience and future outlook. Cancer Treat Rev 2020;86:102017

