Vetter M. Unlocking the Potential of Antibody-Drug Conjugates in Cancer Medicine: Efficacy and Side Effects. *healthbook TIMES Onco Hema.* 2023;17(3):10-11.
doi:10.36000/hbT.OH.2023.17.115

COMMENTARY

Unlocking the Potential of Antibody-Drug Conjugates in Cancer Medicine: Efficacy and Side Effects

Marcus Vetter[1]

[1] Center Oncology & Hematology, Cantonal Hospital Baselland, Baselland, Switzerland

Keywords: Antibody-drug conjugates, Efficacy, Side effects, Breast cancer, Lymphoma, Lung cancer, Stomach cancer, Urothelial cancer

https://doi.org/10.36000/hbT.OH.2023.17.115

healthbook TIMES Oncology Hematology

Vol. 17, Issue 3, 2023

Dear Colleagues,

The field of cancer medicine is expanding rapidly. Nowadays, many treatment options are available, making 50% of all cancers curable. Antibody-drug conjugates (ADCs) are engineered molecules that represent a revolutionary approach in cancer medicine, combining the specificity of monoclonal antibodies with the cytotoxic potential of chemotherapeutic drugs. This unique fusion enables targeted drug delivery to cancer cells while minimizing damage to healthy tissues. Thus, ADCs have the potential to not only enhance treatment efficacy but also reduce side effects associated with traditional chemotherapy. In this review, we discuss the efficacy and potential side effects of ADCs for the treatment of various cancers.

In breast cancer, we now have three approved ADCs with different therapeutic strategies: trastuzumab emtansine (T-DM1),[1,2] trastuzumab deruxtecan (T-Dxd)[3-5] and sacituzumab govitecan (SG).[6,7] These new drugs show significant benefits compared with conventional approaches, and all three have been tested in pivotal phase III trials. Furthermore, the expression of the HER2/ERBB2 tyrosine kinase protein becomes particularly important since T-Dxd has demonstrated significant efficacy in low-expressing tumors (HER2 1+ and 2+).[5]

ADCs are also widely used in lymphoma, lung cancer, stomach cancer, urothelial cancer, and other cancer subtypes, demonstrating higher efficacy than standard-approach chemotherapy or targeted therapy. However, ADCs can cause the same side effects as standard chemotherapy, including hematological toxicities, hepatotoxicity, infusion reactions, peripheral neuropathy, lung toxicity, and dermatological side effects such as rash, pruritus, or dry skin. It is important, therefore, to educate clinicians on these new adverse events with ADCs as well as develop an early detection mechanism for severe side effects, such as interstitial lung disease.

Ongoing research and clinical trials continue to refine ADCs, paving the way for further advancements and expanded applications in the fight against cancer. Effective management of side effects and optimal dosing strategies are critical for realizing the full potential of ADCs and improving outcomes for cancer patients.

Best wishes,
Marcus Vetter

PEER REVIEWED ARTICLE

Conflict of interest

Marcus Vetter received honoraria for serving on advisory boards from AstraZeneca and GSK, honoraria for consultancy from GSK, Roche, Novartis, Exact Sciences, Pfizer, Stemline, AbbVie and ASC Oncology, and grant support from GSK. These funding entities did not play a role in the development of the manuscript and did not influence its content in any way.

Funding

The author has declared that no financial support was received from any organization for the submitted work.

Author contributions

The author created and approved the final manuscript.

REFERENCES

1. von Minckwitz G, Huang CS, Mano MS, et al. Trastuzumab Emtansine for Residual Invasive HER2-Positive Breast Cancer. *N Engl J Med*. 2019;380(7):617-628. doi:10.1056/nejmoa1814017

2. Verma S, Miles D, Gianni L, et al. Trastuzumab Emtansine for HER2-Positive Advanced Breast Cancer. *N Engl J Med*. 2012;367(19):1783-1791. doi:10.1056/nejmoa1209124

3. Modi S, Saura C, Yamashita T, et al. Trastuzumab Deruxtecan in Previously Treated HER2-Positive Breast Cancer. *N Engl J Med*. 2020;382(7):610-621. doi:10.1056/nejmoa1914510

4. Cortés J, Kim SB, Chung WP, et al. Trastuzumab Deruxtecan versus Trastuzumab Emtansine for Breast Cancer. *N Engl J Med*. 2022;386(12):1143-1154. doi:10.1056/nejmoa2115022

5. Modi S, Jacot W, Yamashita T, et al. Trastuzumab Deruxtecan in Previously Treated HER2-Low Advanced Breast Cancer. *N Engl J Med*. 2022;387(1):9-20. doi:10.1056/nejmoa2203690

6. Bardia A, Hurvitz SA, Tolaney SM, et al. Sacituzumab Govitecan in Metastatic Triple-Negative Breast Cancer. *N Engl J Med*. 2021;384(16):1529-1541. doi:10.1056/nejmoa2028485

7. Rugo HS, Bardia A, Marmé F, et al. Sacituzumab Govitecan in Hormone Receptor–Positive/Human Epidermal Growth Factor Receptor 2–Negative Metastatic Breast Cancer. *J Clin Oncol*. 2022;40(29):3365-3376. doi:10.1200/jco.22.01002