

POSTER PRESENTATION

Open Access

# Exploiting metabolic inhibition to eradicate residual tumors after chemo-immunotherapy

Tsadik Habtetsion\*, Gang Zhou

From Society for Immunotherapy of Cancer 29th Annual Meeting  
National Harbor, MD, USA. 6-9 November 2014

Cancer cells have long been known to exhibit metabolic reprogramming which involves a shift towards glycolysis. The enhanced glycolysis of cancer cells not only impose nutrient restriction in the tumor microenvironment, but also contribute to the acidic environment which is hostile to the invading anti-tumor immune cells. Hence, targeting the glycolysis dependency of tumor cells has been exploited for therapy. The glucose anti-metabolite, 2-deoxyglucose (2DG), a competitive inhibitor of glucose transport and glucose phosphorylation by hexokinase, has been extensively tested in various animal models and clinical trials. Although 2DG as anti-cancer agent showed a limited efficacy, its combined use with other treatment modalities, including chemotherapy and radiotherapy, has shown encouraging results. In particular, it has been shown that the combination of 2DG and cytotoxic agent etoposide resulted in enhanced antitumor immune responses, suggesting the therapeutic potential of combining chemotherapy, immunotherapy and glycolysis inhibition. We set out to study how metabolic inhibition alters the tumor microenvironment and how it can be utilized to augment the efficacy of chemo-immunotherapy. We found that glycolysis inhibition alone was detrimental to adoptive T-cell therapy (ACT). However, a rational combination of chemotherapy, ACT and 2DG led to tumor eradication and long-term survival in mice. The underlying mechanism of this synergy will be discussed.

Published: 6 November 2014

doi:10.1186/2051-1426-2-S3-P208

**Cite this article as:** Habtetsion and Zhou: Exploiting metabolic inhibition to eradicate residual tumors after chemo-immunotherapy. *Journal for ImmunoTherapy of Cancer* 2014 **2**(Suppl 3):P208.

Cancer Immunology, Inflammation and Tolerance program (CIIT), Georgia Regents University, Augusta, GA, USA



© 2014 Habtetsion and Zhou; licensee BioMed Central Ltd. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at  
[www.biomedcentral.com/submit](http://www.biomedcentral.com/submit)

