

POSTER PRESENTATION

Open Access

Pilot trial of a type I - polarized autologous dendritic cell vaccine incorporating tumor blood vessel antigen-derived peptides in patients with metastatic breast cancer

Joseph Baar^{1*}, Walter J Storkus², James Finke³, Lisa Butterfield², Hillard Lazarus¹, Jane Reese¹, Katharine Downes¹, Thomas Budd³, Adam Brufsky², Pingfu Fu¹

From Breast Cancer Immunotherapy Symposium (BRECIS), part of the Sidra Symposia Series, held in partnership with the Society for Immunotherapy of Cancer Doha, Qatar. 13-14 April 2015

Cancer vaccines based on tumor-associated antigens are rarely curative in advanced cancer. This limitation relates to the heterogeneity of cancer due to defects in antigen presentation and altered immunophenotypes. Therefore, another method to promote anti-tumor immunity is to prime T cells against tumor-associated stromal cells. We have reported [1] that IL-12 gene therapy of established HLA-A2neg B16 melanomas in HLA-A2+ transgenic mice resulted in CD8+ T cell-mediated immunity against the host HLA-A2+ stromal cells within the tumor microenvironment (TME). We have also shown [2] that vaccines based on a subset of tumor blood vessel antigen (TBVA)-derived peptides (DLK1, EphA2, HBB, NRP1, PDGFR¹, RGS5 or TEM1) prevented HLA-A2neg MC38 tumor establishment and promoted the regression of tumors in HLA-A2+ mice by CD8+ T cell targeting of HLA-A2+ pericytes and vascular endothelial cells in the TME. Based on this pre-clinical data, we propose to undertake a Susan G. Komen -funded (IIR13261822) clinical trial of chem-immunotherapy using the immunomodulatory drug gemcitabine with a dendritic cell vaccine pulsed with six HLA-A2-presented TBVA-derived peptides (DLK1310-318, EphA2883-891, HBB31-39, NRP1433-441, RGS55-13 and TEM1691-700) in 30 HLA-A2+ patients with metastatic breast cancer. The specific aims of this study are to determine vaccine-induced generation of TBVA-Tc1 immunity and clinical response.

Authors' details

¹Seidman Cancer Center, Cleveland, Ohio, USA. ²University of Pittsburgh Cancer Institute, Pittsburgh, Pennsylvania, USA. ³Taussig Cancer Center, Cleveland, Ohio, USA.

Published: 14 August 2015

References

1. Zhao X, Bose A, Komita H, Taylor JL, Kawabe M, Chi N, Spokas L, Lowe DB, Goldbach C, Alber S, Watkins SC, Butterfield LH, Kalinski P, Kirkwood JM, Storkus WJ: **Intratumoral IL-12 gene therapy results in the crosspriming of Tc1 cells reactive against tumor-associated stromal antigens.** *Mol Ther* 2011, **19**(4):805-14.
2. Zhao X, Bose A, Komita H, Taylor JL, Chi N, Lowe DB, Okada H, Cao Y, Mukhopadhyay D, Cohen PA, Storkus WJ: **Vaccines targeting tumor blood vessel antigens promote CD8(+) T cell-dependent tumor eradication or dormancy in HLA-A2 transgenic mice.** *J Immunol* 2012, **188**:1782-8.

doi:10.1186/2051-1426-3-S1-P3

Cite this article as: Baar et al.: Pilot trial of a type I - polarized autologous dendritic cell vaccine incorporating tumor blood vessel antigen-derived peptides in patients with metastatic breast cancer. *Journal for ImmunoTherapy of Cancer* 2015 **3**(Suppl 1):P3.

**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



¹Seidman Cancer Center, Cleveland, Ohio, USA
Full list of author information is available at the end of the article