Hoyo et al. Infectious Agents and Cancer 2010, 5(Suppl 1):A27
http://www.infectagentscancer.com/content/5/S1/A27

INFECTIOUS AGENTS AND CANCER

MEETING ABSTRACTS Open Access

Epigenetic deregulation of *IGF2* and cervical cancer precursors in HIV+ and HIV- patients

Cathrine Hoyo[1*], Francine Overcash[1], Zhiqing Huang[2], Olola Oneko[3], Brandi Vaquez[4], Joseph Obure[3], Pendo Mlay[3], John Bartlett[5], Brenda Hernandez[6], Susan K Murphy[2]

From 12th International Conference on Malignancies in AIDS and Other Acquired Immunodeficiencies (ICMAOI)
Bethesda, MD, USA. 26-27 April, 2010

Introduction

Early detection and aggressive treatment programs to prevent cervical carcinoma in situ (CIS) and invasive uterine cervical cancer (ICC) have been available for more than 30 years with more than 80% population coverage. Despite this, 11,000 cases of ICC and 40,000 cases of CIS continue to be diagnosed in the United States annually. Women of African descent are at >2-fold higher risk of invasive cervical cancer death compared to other ethnic groups.

Objective

The overarching goal is to develop epigenetic biomarkers that can be used for early identification of aggressive cases likely to result in invasive cervical cancer and death.

Methods

We conducted a hospital-based, case-control study comprising 26 women with ICC, 18 with CIN2/3/HSIL and 41 with normal cytology, at Kilimanjaro Christian Medical Center in Moshi, Tanzania. We analyzed methylation of three regions in the *IGF2/H19* imprinted domain known to regulate the expression of imprinted *IGF2*. Aberrant methylation is associated with *IGF2* deregulation, including changes in expression, loss of imprinting, and neoplasia.

Results

At the *IGF2/H19* imprint center upstream of *H19*, methylation profiles for all women with no evidence of cervical abnormality or those with CIN2-CIN3 were within normal ranges (40%-60%), while 23% with invasive cancer had hypermethylation. In contrast, 25% of the CIN2/3 cases were abnormally hypomethylated at the *IGF2* DMR in *IGF2* intron 2, and the methylation profile worsened in the invasive cervical cancer cases with 64% having an abnormal methylation profile. A similar trend was found for the regulatory region in *IGF2* intron 6. Stratifying these analyses by HIV status in ICC revealed that aberrant intragenic *IGF2* hypomethylation was observed only among women without HIV. These associations persisted after adjusting for HPV genotype.

Conclusion

Our findings suggest that regulation of *IGF2* is substantially altered in CIN2 or worse via epigenetic alterations. DNA methylation profiles of these regions may be markers of risk of progression especially in HIV- women. The findings support our hypothesis that epigenetic deregulation of this imprinted gene could be useful in discriminating women with dysplasia likely to progress.

Acknowledgements
This article has been published as part of *Infectious Agents and Cancer* Volume 5 Supplement 1, 2010: Proceedings of the 12th International Conference on Malignancies in AIDS and Other Acquired Immunodeficiencies (ICMAOI). The full contents of the supplement are available online at http://www.biomedcentral.com/1750-9378/5?issue=S1.

Author details
[1]Department of Community and Family Medicine, Duke University, Durham, NC, USA. [2]Department of Obstetrics and Gynecology, Duke University, Durham, NC, USA. [3]Department of Obstetrics and Gynecology, Kilimanjaro Christian Medical Center, Moshi, Tanzania. [4]Kilimanjaro Christian Medical Center–Duke Women's Health Collaboration, Moshi, Tanzania and Durham,

*Correspondence: cathrine.hoyo@duke.edu
[1]Department of Community and Family Medicine, Duke University, Durham, NC, USA
Full list of author information is available at the end of the article

NC, USA. [5]Department of Medicine, Duke University, Durham, NC, USA.
[6]Cancer Research Center of Hawaii, University of Hawaii, Honolulu, HI, USA.

Published: 11 October 2010

doi:10.1186/1750-9378-5-S1-A27
Cite this article as: Hoyo *et al.*: Epigenetic deregulation of *IGF2* and cervical cancer precursors in HIV+ and HIV- patients. *Infectious Agents and Cancer* 2010 **5**(Suppl 1):A27.