OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Gastroenterology & Urology
June 10-12, 2013 Hilton Chicago/Northbrook, USA

Cycling hypoxia remodels androgen deprived androgen dependent incap prostate cancer for increased aggressive tumour progression, angiogenesis and metastatic potential

Maxwell Omabe
Ebonyi State University, Nigeria

Prostate cancer is the commonest form of cancer and the second leading cause of death in men. Approximately 100 men are diagnosed of prostate cancer every day in the UK. Androgen ablation therapy using bicalutamide is a first line drug for treatment of advanced localised prostate cancer; patients treated with this drug have temporal benefits in symptoms and quality of life over a period of 2 years and subsequently develop treatment resistance. Both experimental and clinical data have associated androgen ablation therapy with inducement of hypoxia. We aim to investigate the changes in angiogenesis and cell proliferation index in prostate cancer xenographs during treatment with bicalutamide. SCID mice bearing LNCaP xenograph tumours were treated orally with bicalutamide 2 mk/kg daily for 0, 7, 14, 21, and 28 days. The control group was treated with vehicle only for the corresponding days. Oxygen levels in the tumour were measured using oxygen electrode at each time point. Tumours were excised, fixed and paraffin embedded. Sections were examined for endothelial cell marker CD34, at the tumour edge and inner tumour. Cell proliferation index was evaluated using Ki-67. Treatment with bicalutamide resulted in a time dependent decrease in oxygen level within the first two weeks-with significant hypoxia, followed by re-oxygenation which increased progressively til l 28 days. Evaluation of angiogenesis and cell proliferation index show that tumour MVD a measure of angiogenesis, reduced temporarily to basal level within the first two weeks of treatment, suggesting improvement in disease progression. However, MVD and cell proliferation index increased progressively and concomitantly with tumour re-oxygenation from 21 day till 28 days. Immunohistochemistry technique for Sirt-1 and eNOS demonstrated altered metabolism in the tumour cells and tendencies for increased malignant metastasis. Further experiments showed that the tumour cells abolished programs for collective cooperation, and opted for single cell movement, indicating a functional aggressive growth and fast cancer cell movement especially through vascular route. This suggests that fluctuating low oxygen level remodels and drives increased tumour neovascularisation and cell proliferation during treatment with bicalutamide. It appears that hypoxia selected for cells with altered metabolic and genomic phenotype, with increased metastatic potential. This may explain why hormone deprivation of prostate often fails during treatment with bicalutamide.

Biography

Maxwell Omabe obtained a doctoral degree at University of Ulster in the UK, He received National and Presidential awards for Scientific Innovations in Nigeria in 2012. He had received several academic and research awards at both provincial and international level. He qualified as a Chartered Scientist at Science Council in the UK. Maxwell Omabe is Senior Lecturer in Faculty of Health Sciences at Ebonyi State University. He is the Coordinator of postgraduate studies and Faculty Representative at the PG Board of the University. He has published in reputed international and national journals and is serving as an editorial board member of reputed international journals. His research interest is focused on translational endocrine cancer biology, personalized and experimental medicine, using a number of molecular biology, *in-vitro* and *in-vivo* techniques.

maswello2002@yahoo.com