DNA PLOIDY IN ORAL SQUAMOUS CELL CARCINOMA AMONG MALAYSIANS

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ABSTRACT

Objective: To determine the prevalence of the state of DNA ploidy in OSCC; to compare the state of DNA ploidy between the tumour and its margin; to investigate the association between DNA ploidy status of surgical margins and type of surgical margins; and to investigate the association between the state of DNA ploidy of OSCC and sociodemographic and clinicopathological parameters.

Material and method: Specimens (n=78) consisting of paraffin-embedded tissue of OSCC were selected from University of Malaya Oral Pathology Diagnostic Laboratory archives between 2002 to 2009 and peripheral blood monocytes (PBMC) was used as an external control. The cell/nuclear suspensions were cytospined after enzyme digestion and stained with blue feulgen and used to measure the Integrated Optical Density (IOD) of the stained DNA for detection of the ploidy status. Calibration and validation of newly developed Image-pro MDA image cytometry software was done using flow cytometry evaluation and further validated against a commercial image cytometry software (OTMIAS).

Results: The prevalence of aneuploidy in OSCC was 96.2%. There is a statistically significant difference ($p<0.001$) between the DNA ploidy of the tumour and the ploidy status of its margins where all the diploid tumours were associated with the diploid margins and some aneuploid tumours were associated with aneuploid margins (15.7%). There is also a statistically significant difference ($p<0.001$) between types of pathological margins and ploidy status of surgical margins where all close margins were associated with aneuploid tumours and a high percentage (92.1%) of clear margins were associated with aneuploid tumours. The types of pathologic margins (close and clear margins) showed no significant association with the DNA ploidy status of tumour margins ($p=0.75$). Among the clinicopathological parameters, the tumour site

(*p=0.009*), pattern of invasion (*p=0.004*), histopathological classification (*p=0.025*) and the depth of invasion (*p=0.*004) showed statistically significant association with DNA ploidy status of OSCC.

Conclusion: Most of OSCC were aneuploid tumours. All the diploid tumours were associated with the diploid margins and some aneuploid tumours were associated with aneuploid margins. All close margins were associated with aneuploid tumours and a high percentage of clear margins were associated with aneuploid tumours. There is a lack of association between the margin ploidy status and the pathological types of surgical margins where there is no difference in the distribution of margin ploidy status in close and clear margins. Four clinicopathologic parameters namely histopathological classification, pattern of invasion, tumour site and depth of invasion were found to be associated with the tumour DNA ploidy status.

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I dedicate this dissertation to my parents, my family and brothers,

My definition of LOVE and meaning of LIFE

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