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.
This book you are holding in your hand is very special to me and means a lot to my career and life as a whole. The work described in this book will always be one of my most cherished and invaluable accomplishments, as many subtle and significant challenges had to be overcome with much patience and perseverance. I enjoyed every moment of this fascinating journey during which new knowledge and skills have been learnt, which gives better hopes for bright future, by giving a glimpse of new horizons. This work would have been impossible without these people whom I met during this journey and who will all be remembered in the fondest memories and their priceless contributions, cherished till eternity.

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

My definition of LOVE and meaning of LIFE
2.5. Tumour cell cycle

2.6. Clinical presentation of oral cancer

2.7. Histopathological feature of oral cancer

2.8. Clinical and histological prognostic indicators of oral cancer

2.8.1. Tumour stage

2.8.2. Tumour size and tumour thickness/depth of invasion

2.8.3. Lymph node status

2.9. Surgical margin involvement and field cancerization of oral cancer

2.10. DNA content

2.10.1. Measuring DNA content

2.10.2. DNA ploidy

2.10.2.1. Classification of DNA ploidy

2.11. DNA ploidy and cancer prognosis

2.12. Distribution of DNA ploidy in oral cancer

2.13. ploidy and prognosis of head and neck cancer

CHAPTER 3: MATERIALS AND METHODS

3.1. Sample size estimation

3.2. Sample selection

3.3. Study variables

3.3.1. Dependent variables

3.3.2. Independent variables

3.4. Measurement tool

3.4.1. System requirement

3.4.1.1. Image Pro MDA image cytometry hardware and software

3.4.1.2. Flow cytometry hardware and software

3.4.2. Calibration of flow cytometry using DNA QC kit

3.4.3. Tissue preparation and staining

3.4.3.1. Tissue preparation

a. PBMC separation

b. nuclear extraction from FFPE samples

3.4.3.2. Staining

a. Propidium Iodide for FCM staining

i. PBMC samples

ii. FFPE samples
b. Blue feulgen for ICM staining
   i. PBMC samples
   ii. FFPE samples

3.4.4. DNA ploidy evaluation procedures
   a. PBMC cells and FFPE nuclei for FCM
   b. PBMC cells and FFPE nuclei for ICM
   c. Lymphocytes for internal control (normal diploid)
   d. Analysis using Image Pro MDA

3.4.5. Calibration of the Image Pro MDA image cytometry using PBMC

3.4.6. Development of criteria for DNA ploidy using Image Pro MDA image cytometry

3.5. Data acquisition/collection
   3.5.1. Histopathological and clinicopathological criteria
      a. Broder’s tumour grading

3.6. Evaluation of cells/nuclei for inclusion in the analysis for ICM
   i. Criteria for DNA staining and grading of stained cells
   ii. Criteria for counting of stained cells

3.7. Statistical analysis

CHAPTER 4: RESULTS

4.1. Development of criteria for determining ploidy status using Image Pro MDA
   4.1.1. Detection of ploidy status for PBMC using analysis FCM
   4.1.2. Detecting of ploidy status for FFPE analysis using FCM
   4.1.3. Detection of ploidy status of FFPE using ICM
   4.1.4. Validation of ICM against FCM
   4.1.5. Validation of DNA ploidy status from Image Pro MDA software against the OTMIAS ICM commercial software

4.2. Prevalence of the state of DNA ploidy in OSCC

4.3. Comparing DNA ploidy status between the tumour and its margin

4.4. Comparison of DNA ploidy status of surgical margin with the pathological type of surgical margins

4.5. Association between the state of DNA ploidy of the tumour and the sociodemographic and clinicopathological parameters
<table>
<thead>
<tr>
<th>CHAPTER 5: DISCUSSION</th>
<th>71</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1. Sample size</td>
<td>71</td>
</tr>
<tr>
<td>5.2. Development of DNA ploidy criteria using image cytometry</td>
<td>71</td>
</tr>
<tr>
<td>5.3. Prevalence of the state of DNA ploidy status in OSCC</td>
<td>76</td>
</tr>
<tr>
<td>5.4. Comparison of the state of DNA ploidy between the tumour and its margin</td>
<td>77</td>
</tr>
<tr>
<td>5.5. DNA ploidy status of surgical margin and type of surgical margins</td>
<td>79</td>
</tr>
<tr>
<td>5.6. The state of DNA ploidy of the tumour and the sociodemographic and clinicopathological parameters</td>
<td>80</td>
</tr>
</tbody>
</table>

<p>| CHAPTER 6: CONCLUSIONS AND RECOMMENDATION | 85 |
| REFERENCES                               | 87 |
| APPENDICES                               | 108 |</p>
<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Image cytometry requirement</td>
<td>108</td>
</tr>
<tr>
<td>2</td>
<td>DNA QC particles and FCM calibration</td>
<td>109</td>
</tr>
<tr>
<td>3</td>
<td>PBMC separation from blood using Ficol Paque Plus</td>
<td>114</td>
</tr>
<tr>
<td>4</td>
<td>H&amp;E staining</td>
<td>116</td>
</tr>
<tr>
<td>5</td>
<td>Dewaxing, rehydration and enzyme digestion of FFPE OSCC</td>
<td>117</td>
</tr>
<tr>
<td>6</td>
<td>Propidium Iodide stain for PBMCs control lymphocyte</td>
<td>119</td>
</tr>
<tr>
<td>7</td>
<td>Propidium Iodide staining for OSCC sample</td>
<td>121</td>
</tr>
<tr>
<td>8</td>
<td>Blue feulgen staining</td>
<td>123</td>
</tr>
<tr>
<td>9</td>
<td>Evaluation of PBMC and FFPE in ICM</td>
<td>124</td>
</tr>
<tr>
<td>10</td>
<td>OTMIAS software analysis</td>
<td>125</td>
</tr>
<tr>
<td>11</td>
<td>Set up the Image Cytometry System</td>
<td>127</td>
</tr>
<tr>
<td>12</td>
<td>Image Pro MDA analysis</td>
<td>128</td>
</tr>
<tr>
<td>13</td>
<td>Patient’s sociodemographic and clinicopathological data</td>
<td>130</td>
</tr>
<tr>
<td>14</td>
<td>Modified Broders’ tumour grading</td>
<td>134</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>The cell cycle</td>
<td>20</td>
</tr>
<tr>
<td>3.1</td>
<td>Flow chart for the development of the criteria for ploidy analysis using Image Pro ICM</td>
<td>49</td>
</tr>
<tr>
<td>3.2</td>
<td>Image Cytometry System</td>
<td>50</td>
</tr>
<tr>
<td>4.1</td>
<td>Histogram of diploid PBMC</td>
<td>59</td>
</tr>
<tr>
<td>4.2</td>
<td>Histogram of ploidy status of FFPE using FCM</td>
<td>60</td>
</tr>
<tr>
<td>4.3</td>
<td>Histogram of ploidy status of FFPE samples using ICM</td>
<td>64</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 2.1 Relation between ploidy and DNA content of G1 phase nuclei 38
Table 4.1 Sociodemographic characteristics of samples 58
Table 4.2 Ploidy content of 7 FFPE samples and the coefficient of variants (CV) and DNA indices (DI) using MODFIT software for the flow cytometry. 61
Table 4.3 Comparison of the FCM and Image-pro MDA ICM results of 7 test samples 65
Table 4.4 Ploidy status of 7 samples using Image-pro MDA and OTMIAS software 66
Table 4.5 Prevalence of DNA ploidy status of OSCC 66
Table 4.6 Comparison of DNA ploidy status of tumour and its margin 67
Table 4.7 Comparison of DNA ploidy status of tumour with pathological types of surgical margins 68
Table 4.8 Comparison between the Margin ploidy status and the pathological types of surgical margins (close and clear margins) 68
Table 4.9 Association of tumour DNA ploidy status with sociodemographic and clinicopathological parameters 70