ABSTRACT

THE CARCINOGENESIS OF ORAL SQUAMOUS CELL CARCINOMA INFECTED BY EPSTEIN-BARR VIRUS (EBV) BASED ON THE EXPRESSION OF p53,c-myc AND bcl-2

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Squamous Cell Carcinoma (SCC) is a type of cancer often found in oral cavity and the area of head and neck. SCC comprises 90% 0ther cancers frequently found in those area. In East Java the incidence of Oral Squamous Cell Carcinoma (OSCC) is about 2,64% and it increases every year. Virus is known as one of the main factors that result in this disease. After primary infection virus will remain latent in human cell. Periodically virus will product gene that can disturb proliferative and apoptotic regulator such as p53, c-myc and bcl-2. Based on molecular pathobiology paradigm this study was intended the proliferative and apoptotic mechanism in OSCC that was infected by Epstein-Barr Virus (EBV). This analysis observational study using cross sectional design revealed the outcome of EBV infection on OSCC. This study found 35 cases in which 17 OSCC cases were infected by EBV, 8 OSCC cases were not infected by EBV and 10 cases normal cell (control). Detection of EBV infection could be done by insitu hybridization to identify RNA EBV (EBER) and by immunohistochemical analysis to find the expressions of (1) Latent Membrane Protein-1 (LMP-1) and (2) EBV Nuclear Antigen-1 (EBNA-1). There were some significant differences among three variables ($p < 0,05$). To describe the role of three genes to carcinogenesis this study observed cell proliferation and apoptosis regulator i.e., inactive p53, c-myc and bcl-2. The detection of the expression of inactive p53, c-myc and bcl-2 could be done by immunohistochemical analysis. There were some significant different expression of inactive p53, c-myc, bcl-2 on OSCC that was infected and non infected by EBV and control ($p < 0,05$). In this research was formed three new groups of proliferative and apoptotic mechanism based on the variables that were tested, such as new group-1 (kb-1), new group-2 (kb-2), new group-3 (kb-3). In the first new group (kb-1) proliferative and apoptotic mechanism was mostly acted by the expression of c-myc and was followed by inactive p53. Most of EBV infection could be seen in LMP-1 expression and then was followed by EBNA-1,while the role of the expression of bcl-2 and EBER also had less remarkable in this group. In the second new group (kb-2) proliferative and apoptotic mechanism was more predominated by inactive p53. The expression of c-myc had less remarkable role compared to p53. EBER and LMP-1 had more

remarkable role while, EBNA-1 also had a less remarkable than other EBV genes. The expression of bcl-2 had less action in this group. In the third new group (kb-3) proliferative and apoptotic mechanism played more remarkably by EBNA-1, while the role of c-myc was less. EBV infection resulted more by the action of EBNA-1 while the two others were less. The use of discriminant analysis to the new groups, five discriminators were found i.e., EBER, LMP-1, EBNA-1, inactive p53 and c-myc. Conclusion: Oral squamous cell carcinoma can be infected by Epstein-Barr Virus (EBV) such as EBER, LMP-1 and EBNA-1. Based on molecular pathobiology this study disclosed the expression of inactive p53, c-myc and bcl-2 that could be used for explaining the occurrence mechanism of EBV infected oral squamous cell carcinoma.

Keyword: Epstein-Barr Virus (EBV), oral squamous cell carcinoma, EBER, LMP-1, EBNA-1, inactive p53, c-myc, bcl-2.

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