

Evaluation of Blood Cell Ratios and Blood Eosinophilic Changes in Patients with Oral Potentially Malignant Disorders - Findings from a Pilot Study

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Oral Potentially Malignant Disorders (OPMD) are defined as a group of mucosal disorders that have an elevated risk to proceed into oral squamous cell carcinoma (OSCC). Eosinophilia has also been described in hematological malignancies and rarely in solid cancers such as, OSCC. Therefore, we attempted to evaluate blood cell ratios along with blood eosinophilic changes in OPMD which is the precancerous stage of OSCC. The study employed an observational case-control design with four study groups, Oral Leukoplakia (OL), Oral Lichen Planus (OLP), Oral Submucosal Fibrosis (OSF), and disease-free controls. The sample size for the total cohort was 51. 2ml of IV blood was collected from all participants and the socio-demographic details and habit history were collected using questionnaire. Full Blood Count (FBC) was performed using automated hematology analyzer to evaluate neutrophil-to-lymphocyte ratio (NLR), monocyte-to-lymphocyte ratio (MLR), platelet-to-lymphocyte ratio (PLR) and blood eosinophilia. A blood picture was prepared and stained with Leishman stain and observed for eosinophilic morphological changes under the light microscope. Statistical analysis was done by comparing each study group with healthy controls using SPSS. Mild eosinophilia (0.5×10^9 - 1.5×10^9 cells/L) and moderate eosinophilia (1.5×10^9 - 5×10^9 cells/L) was observed in OLP and OSF patients and normal eosinophilic condition was observed in all control samples. As morphological changes, degranulation of the cells was observed in OL, OLP, and OSF and the 92.9% of the control group showed normal eosinophilic morphology. The MLR was significantly high in OL compared to controls ($P = 0.046$). High eosinophils in OL and OSF and morphological changes in OL, OLP and OSF may be due to the presence of inflammation in these patients. A significant difference in cell ratio indicates the evidence of underlying immune modulatory mechanisms in the pathogenesis of OL. Pilot data of this study indicate that there are significant differences in blood cell ratios, eosinophilic condition and morphology in OL, OLP and OSF patients compared to disease free group.

Keywords: Eosinophils, Oral Potentially Malignant Disorders, Blood eosinophilia, degranulation, Blood cell ratio