Abstract

Background:

Langerhans cells are antigen presenting cells that are usually present in the suprabasal layer of oral epithelium. These langerhans cells in the oral epithelium recognize the antigens, pathogens and tumor associated antigens which they encounter at the epithelial interface, process them and present them to the naïve T cells present in the lymph node there by activating the immune response. When there is a disturbance in tissue homeostasis due to infection, inflammation, dysplasia or neoplasia the langerhans cells are actively participating in eliminating these antigens by activation of cell mediated immunity thereby causing variation in their number and distribution.

Aims and Objectives:

To quantitatively estimate the langerhans cells using CD1a primary antibody in normal oral mucosa, inflammatory mucositis, oral epithelial dysplasia and oral squamous cell carcinoma and to compare the estimated number of langerhans cells among the study groups and with that of control group.

Materials and methods:

This is an inter observational study including a total of 40 samples (10 normal mucosa, 10 inflammatory mucositis, 10 oral epithelial dysplasia and 10 well differentiated squamous cell carcinoma cases). Immunohistochemical expression of CD1a was analyzed in formalin fixed paraffin embedded blocks of histopathologically confirmed cases using CD1a antibody. Counting of positive cells was done on all slides and the mean langerhans cell count was obtained and statistically analyzed.

Results:

There was a significant variation in the number of CD1a positive langerhans cells between the samples of normal oral mucosa, inflammatory mucositis, oral epithelial dysplasia and oral squamous cell carcinoma. The number of CD1a positive cells was lowest in normal mucosa, followed by inflammatory mucositis, oral epithelial dysplasia and was highest in well differentiated oral squamous cell carcinoma. The results were statistically significant among all the groups except between inflammatory mucositis and oral epithelial dysplasia which was not statistically significant although their number was increased.

Conclusion:

The observations from the present study shows that langerhans cell infiltration is prognostically important in inflammatory, dysplastic as well as neoplastic diseases confirming that these cells may act as important immune factors that function as antigen presenting cells in the defense mechanism. The langerhans cell number increased in head and neck squamous cell carcinoma compared to the dysplastic lesions. The extent of langerhans cell infiltration in tumor-associated stroma is correlated with better prognosis in terms of recurrence and overall survival rate.

Keywords:

CD1a, Inflammatory mucositis, Langerhans cells, Oral epithelial dysplasia, Oral squamous cell carcinoma.