Inflammation and host response in carcinogenesis and predicting lymph node involvement in oral squamous cell carcinoma

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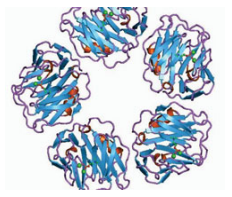
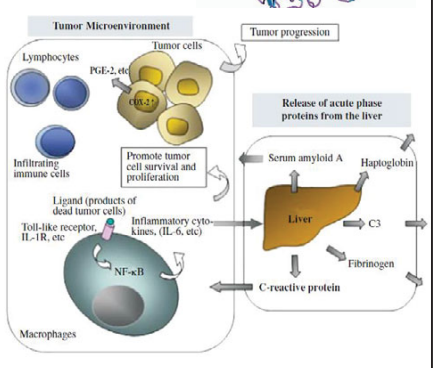
Introduction

- Clinicopathological parameters have been implicated in prognosis, recurrence, and survival following oral squamous cell carcinoma (OSCC)
- Pre-treatment laboratory prognostic index (LPI) based on laboratory results - extension to CP for prognosis and treatment in patients with OSCC
- Presence of systemic inflammatory response - indicates poor prognosis in OSCC
- Virchow(1863) - origin of cancer at sites of chronic inflammation irritants, together with tissue injury and ensuing inflammation, enhance cell proliferation



- **C-reactive protein** (**CRP**) - annular (ring-shaped), pentametric protein and actute-phase protein found in blood plasma - levels of which rise in response to inflammation
- Widely used systemic biomarker for diagnosing acute and chronic inflammation
- Clinical use - diagnosis of cardiovascular diseases & malignancies
- Serum CRP - elevated in malignancies, implying close linkages in inflammation and malignancy
- Higher risk of developing cancer in subjects with elevated serum CRP



Material & Methods

Sampling Methodology

Sample Group	Planned sample size	Current sample size	Remarks
Group I	30	20	history of tobacco chewing of more than 3 years but without developing any lesion
Group II	30	8	history of tobacco chewing manifesting with the development of precancerous conditions
Group III	30	6	individuals who chew tobacco and have developed oral cancer

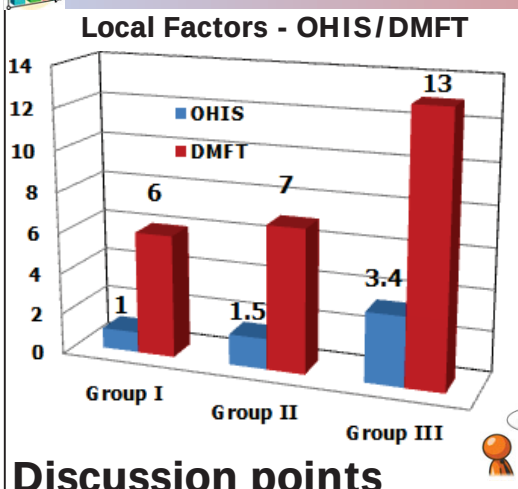
CRP levels

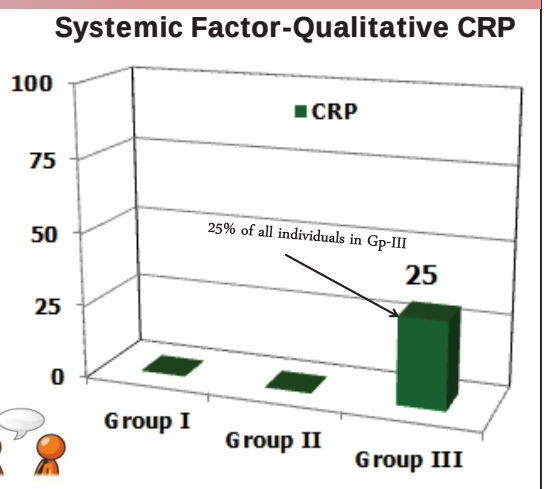
- Patients evaluated via DMFT & OHIS index
- Serum was separated from withdrawn peripheral blood, which was then sent for CRP analysis
- Qualitative evaluation of CRP was done
- Standard laboratory techniques were used to determine pre-treatment CRP levels
- Presence of agglutination indicated presence of CRP in peripheral blood

Aims and objectives

Correlating the patients' oral hygiene status (using local infection factors) with C-reactive protein as a systemic inflammatory indicator

Test Results & Trends





Discussion points

- Positive association between pre-operative CRP levels and prognosis of OSCC
- Possible mechanisms to explain such association are:

a) Tumour growth can cause tissue inflammation and hence increased CRP levels
b) CRP as an indicator of immune response to tumour antigens
c) Evidence of cancer cells increasing the production of inflammatory proteins
d) Some cancerous cells cell lines secrete Interleukin-6 (IL-6) and IL-8, which in turn induce the production of CRP

Conclusion

- Unlike cancers affecting other organs, carcinomas arising in the oral cavity did not exhibit raised CRP levels in our study. The local factors, tobacco, and areca nut along with oral hygiene may play a more pivotal role in carcinogenesis.

Future scope

- Patients diagnosed with potentially malignant disorders should be subjected to thorough oral prophylaxis along with counselling for discontinuation of bad habits. This would reduce the incidence of oral cancer by reducing the bacterial load and local inflammation. The addition of oral prophylaxis should be included as a standard oral cancer management protocol.

References

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