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Matrix metalloproteinase I (MMP-1) levels as a predictive marker of oral mucositis severity among head and neck carcinoma patients undergoing radiotherapy

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INTRODUCTION: Concurrent chemoradiotherapy is an established modality in the management of head and neck cancer. Although employed to improve quality of life, its association with several side effects remains a clinical threat. Matrix metalloproteinase-1 (MMP-1) degrades most extracellular matrix proteins including collagen. Found to increase in cancer, further rise ensues when exposed to radiotherapy. The primary objective of this study is to assess the adverse effects of radiotherapy in relation to the significant change in the level of MMP-1 on selected head and neck carcinoma patients.

METHODOLOGY: This is an observational longitudinal approach on 20 head and neck cancer patients. MMP-1 levels in the plasma samples at Day 0 and Day 10 were determined by ELISA method. Oral mucositis (OM), a radiation-induced toxicity, was evaluated using the Radiation Therapy Oncology Group (RTOG) grading system. Correlation between MMP-1 level and complete blood count (CBC) was also analyzed.

RESULTS: MMP-1 levels showed an increasing trend from Day 0 to Day 10. However, p-value (0.148) presented a statistically insignificant correlation between MMP-1 level and radiotherapy. The RTOG-measured OM exhibited significant correlation with MMP-1 levels (p-value: 0.026). Parallel to OM, certain hematological parameters such as platelets and leukocytes also showed a significant relationship with MMP-1 levels (p value of 0.0099 and 0.0397, respectively).

CONCLUSION: The study results showed the potential role of MMP-1 as a predictive marker to assess severity of oral mucositis among head and neck cancer patients undergoing radiotherapy.

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