

Esophageal Cancer

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Predictors for the Development of Mucositis in Patients with Esophageal Carcinoma Receiving Concurrent Chemoradiotherapy

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Aim: To evaluate the predictors for mucositis in patients with upper digestive track malignancies receiving concurrent chemoradiotherapy.

Background: Mucositis is one of the most disturbing adverse events observed in patients receiving concurrent chemotherapy and radiotherapy, and often causes treatment interruption. The incidence of this event is not uniform among all patients receiving the same protocol, and some patients are at higher risk than others. The predictors for mucositis in the southern Indian population have not yet been addressed. Therefore, this study was conducted to evaluate and develop a model to predict the possible incidence of mucositis in patients receiving concurrent chemoradiotherapy, which would allow for preventive intervention strategies.

Methods: This study was conducted at Kidwai Memorial Institute of Oncology, a tertiary cancer center with an estimated new patient enrollment of 15,000 annually. All of the patients with esophageal carcinoma undergoing chemoradiation therapy were analyzed. The patients were receiving cisplatin 40 mg/m²/week along with local radiation of 50-60 Gy. Medical version 7.0 for Windows was used for the analysis. The hypothesized risk factors were: age; co-morbid conditions, such as diabetes and patients taking immunosuppressive agents; low white blood cell counts (WBC); nutritional status; history of continuing tobacco use; elevated erythrocyte sedimentation rate (ESR) representing an acute inflammatory reaction; World Health Organization performance status; and disease stage. ROC (repression operation curves) curves were drawn to

predict the cut-off values and the final scoring system was presented with sensitivity and specificity data.

Results: The cut-off values, as suggested by ROC, were 50 years of age, performance status ≤ 2 , WBC count $< 2,500/\mu\text{L}$, ESR > 3 times the upper normal range, and $>$ stage III disease. The remaining were chosen as an all or none basis. A score of 1 was given for the following: age > 50 years, ESR > 3 times upper limit, albumin < 33 g/dL (chosen as a marker for nutrition), WBC $< 2,500/\mu\text{L}$, performance status > 2 , $>$ stage III disease, use of tobacco, and presence of any comorbid condition. The absence of any of these parameters was assigned a score of 0.

Risk group	Score	Incidence of mucositis	Sensitivity to predict mucositis of $>$ grade 3	Specificity to predict mucositis of $>$ grade 3
High	6-8	Grade 3, 50% Grade 4, 30%	98%	75%
Intermediate	3-5	Grade 3, 35% Grade 4, 15%	65%	35%
Low	< 3	Grade 3, 20% Grade 4, 5%	35%	10%

Conclusion: The above scoring system is accurate in predicting the probability of the development of mucositis in patients receiving concurrent chemoradiotherapy in our population. Preventive strategies such as use of growth factors and topical agents are worth trying in this population.