

A Predictive Survival Model for Stage IV Oropharyngeal Carcinoma Patients

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Objective

- Single tertiary medical center retrospective cohort study.
- To assess and understand the pre-treatment and post-treatment prognostic markers associated with rate of survival at 1, 3, and 5 years in stage IV oropharyngeal cancer (OPC) patients treated with concurrent chemoradiation with/without neoadjuvant chemotherapy.
- A nomogram was developed to predict rate of survival at 1, 3 and 5 years in these patients.

Methods

- We retrospectively reviewed patients who were diagnosed with advanced OPCs (stage IVA and IVB) between February 2008 and November 2019 at Far Eastern Memorial Hospital (FEMH).
- The patients were treatment with systemic therapy.
- We evaluated the pre-treatment and post-treatment laboratory data.
- We investigated five inflammatory indexes: lymphocyte-to-monocyte ratio (LMR), neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), systemic immune inflammation (SII), and systemic inflammation response index (SIRI).
- The primary outcomes in this study were disease-specific survival (DSS) and disease-free survival (DFS).
- A nomogram was generated to predict the DSS within 1, 3 and 5 years after treatment completion.

Results

- The 5-year overall survival rate for all patients was 36.72%.
- The DSS at 1-year and 3-year were 80% and 63% (figure 1A).
- The DFS at 1-year and 3-year were 49% and 40% (figure 1B).
- In multivariate analyses, pretreatment hemoglobin (Hb) < 12 g/dl (hazard ratio [HR] 2.551, 95% confidence interval [CI] 1.366–4.762, p = 0.003), pretreatment SII ≥ 1751 (HR 2.173, 95% CI 1.015–4.652, p = 0.046), and posttreatment SIRI ≥ 261 (HR 2.074, 95% CI 1.045–4.115, p = 0.037) were independent indicators for worsened DSS.
- In multivariate analyses, pretreatment Hb < 12 g/dl (HR 1.692, 95% CI 1.019–2.809, p = 0.032), pretreatment SII ≥ 1751 (HR 1.968, 95% CI 1.061–3.650, p = 0.032), and posttreatment SII ≥ 1690 (HR 1.922, 95% CI 1.105–3.345, p = 0.021) were independent indicators for worsened DFS.
- A nomogram was developed using pretreatment Hb, pretreatment SII, and posttreatment SIRI to forecast DSS (figure 3).
- The cutoff nomogram score of 62.5 showed good discrimination among stage IV OPC patients.

Figure 1

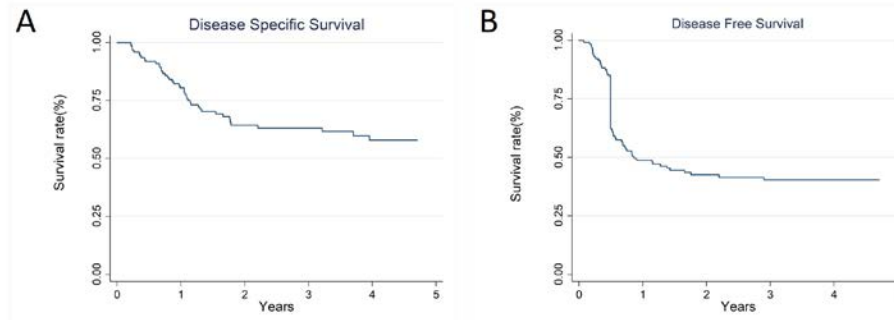


Figure 3

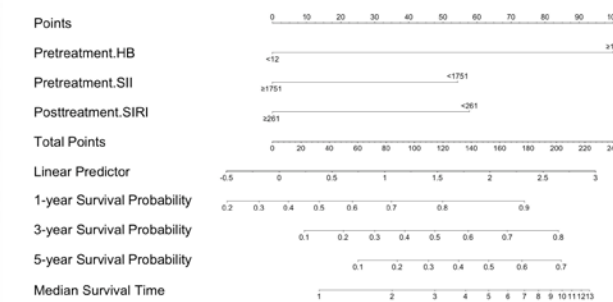
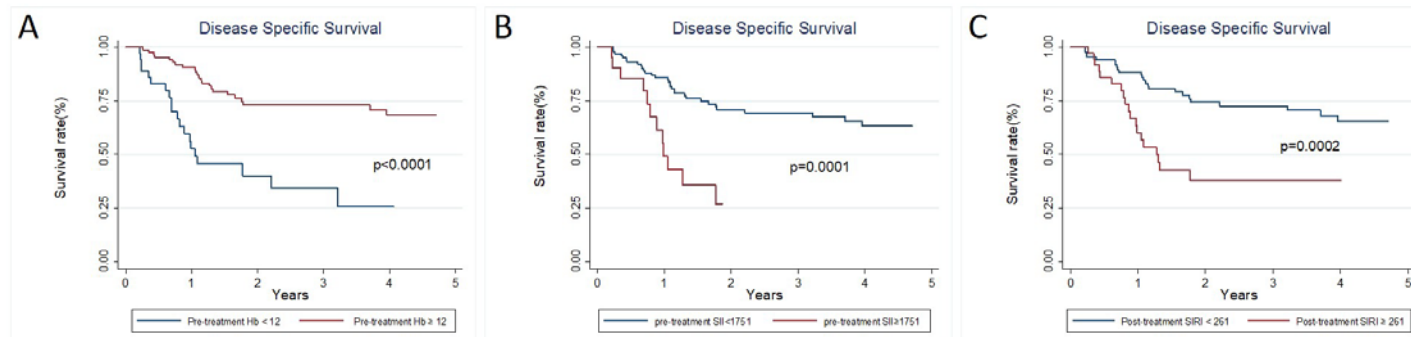


Figure 2



Discussion

- Low pretreatment Hb levels, elevated pretreatment SII, high posttreatment SII and SIRI are independent prognostic parameters for survival in stage IV oropharyngeal cancers.
- To our knowledge, this is the first study with a 5-year nomogram developed for the prediction of survival among stage IV oropharyngeal cancer patients.

Conclusions

- The pretreatment Hb, pretreatment SII, posttreatment SII, and posttreatment SIRI are associated with survival in patients with stage IV OPCs.
- The developed nomogram aids in survival prediction and treatment adjustment.

References

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This study was supported by grants of FEMH (FEMH-2023-C-030), Taiwan.