

The Influence of Nutritional and Immunological Status on the Prognosis of Head and Neck Cancer

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Abstract : Objectives: Head and neck cancer (HNC) is a big global health problem in the world. Despite the development of diagnosis and treatment, the overall survival of HNC is still low. The well recognition of the interaction of the host immune system and cancer cells has led to realizing the processes of tumor initiation, progression and metastasis. Many systemic inflammatory responses have been shown to play a crucial role in cancer progression. The pre and post-treatment nutritional and immunological status of HNC patients is a reliable prognostic indicator of tumor outcomes and survivors. Methods: Between July 2020 to June 2022, We have enrolled 60 HNC patients, including 59 males and 1 female, in Chi Mei Medical Center, Liouying, Taiwan. The age distribution was from 37 to 81 years old (y/o), with a mean age of 57.6 y/o. We evaluated the pre-and post-treatment nutritional and immunological status of these HNC patients with body weight, body weight loss, body mass index (BMI), whole blood count including hemoglobin (Hb), lymphocyte, neutrophil and platelet counts, biochemistry including prealbumin, albumin, c-reactive protein (CRP), with the time period of before treatment, post-treatment 3 and 6 months. We calculated the neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) to assess how these biomarkers influence the outcomes of HNC patients. Results: We have carcinoma of the hypopharynx in 21 cases with 35%, carcinoma of the larynx in 9 cases, carcinoma of the tonsil and tongue every 6 cases, carcinoma soft palate and tongue base every 5 cases, carcinoma of buccal mucosa, retromolar trigone and mouth floor every 2 cases, carcinoma of the hard palate and low lip each 1 case. There were stage I 15 cases, stage II 13 cases, stage III 6 cases, stage IVA 10 cases, and stage IVB 16 cases. All patients have received surgery, chemoradiation therapy or combined therapy. We have wound infection in 6 cases, 2 cases of pharyngocutaneous fistula, flap necrosis in 2 cases, and mortality in 6 cases. In the wound infection group, the average BMI is 20.4 kg/m²; the average Hb is 12.9 g/dL, the average albumin is 3.5 g/dL, the average NLR is 6.78, and the average PLR is 243.5. In the PC fistula and flap necrosis group, the average BMI is 21.65 kg/m²; the average Hb is 11.7 g/dL, the average albumin is 3.15 g/dL, average NLR is 13.28, average PLR is 418.84. In the mortality group, the average BMI is 22.3 kg/m²; the average Hb is 13.58 g/dL, the average albumin is 3.77 g/dL, the average NLR is 6.06, and the average PLR is 275.5. Conclusion: HNC is a big challenging public health problem worldwide, especially in the high prevalence of betel nut consumption area Taiwan. Besides the definite risk factors of smoking, drinking and betel nut related, the other biomarkers may play significant prognosticators in the HNC outcomes. We concluded that the average BMI is less than 22 kg/m², the average Hb is low than 12.0 g/dL, the average albumin is low than 3.3 g/dL, the average NLR is low than 3, and the average PLR is more than 170, the surgical complications and mortality will be increased, and the prognosis is poor in HNC patients.

Keywords : nutritional, immunological, neutrophil-to-lymphocyte ratio, paltelet-to-lymphocyte ratio.

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