The Prognostic Value of Dynamic Changes of Hematological Indices in Oropharyngeal Cancer Patients Treated with Radiotherapy

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Abstract : Objectives: We aimed to explore the prognostic effects of absolute values and dynamic changes of common hematological indices on oropharynx squamous cell carcinoma (OPSCC) patients treated with radiation. Methods and materials: The absolute values of white blood cell (WBC), absolute neutrophil count (ANC), absolute lymphocyte count (ALC), hemoglobin (Hb), platelet (Plt), albumin (Alb), neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) at baseline (within 45 days before radiation), 1-, 3-, 6- and 12-months after the start of radiotherapy were retrospectively collected. Locally-estimated smoothing scatterplots were used to describe the smooth trajectory of each index. A mixed-effect model with a random slope was fitted to describe the changing rate and trend of indices over time. Cox proportional hazard analysis was conducted to assess the correlation between hematological indices and treatment outcomes. Results: Of the enrolled 85 OPSCC patients, inflammatory indices, such as WBC and ALC, dropped rapidly during acute treatment and gradually recovered, while NLR and PLR increased at first three months and subsequently declined within 3-12 months. Higher absolute value or increasing trend of nutritional indices (Alb and Hb) was associated with better prognosis (all $p<0.05$). In contrast, patients with higher absolute value or upward trend of inflammatory indices (WBC, ANC, Plt, PLR and NLR) had worse survival (all $p<0.05$). Conclusions: The absolute values and dynamic changes of hematological indices were valuable prognostic factors for OPSCC patients who underwent radiotherapy.
Keywords : hematological indices, oropharyngeal cancer, radiotherapy, NLR, PLR
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