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Individualized Concurrent Chemoradiotherapy or Targeted Radiotherapy by Pre-Treatment Plasma Epstein-Barr Virus DNA in Locoregionally Advanced Nasopharyngeal Carcinoma

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Abstract
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Abstract

Objectives:

To investigate the value of pre-treatment Epstein-Barr virus DNA (pre-DNA) for individualized concurrent therapy during intensity-modulated radiotherapy (IMRT).

Methods:

In total, 491 patients with newly diagnosed locoregionally advanced nasopharyngeal carcinoma (LA-NPC), undergoing radical induction chemotherapy (IC) + concurrent targeted radiotherapy (CTRT) or chemoradiotherapy (CCRT) were retrospectively reviewed. The cut-off value of pre-DNA was calculated by receiver operating characteristics curve based on the primary endpoint, disease-free survival (DFS). The log-rank and chi-squared tests were respectively used to evaluate the difference of survival and toxicities between CCRT and CTRT groups. Potential independent prognostic factors were identified by multivariate cox proportional hazard analysis.

Results:

CCRT and CTRT groups did not differ in survival among the original cohort. The cut-off value of pre-DNA was 4315 copies/ml (area under curve, 0.627; sensitivity, 0.661; specificity, 0.609). Besides, the CCRT and CTRT groups showed equivalent survival outcomes for low-risk patients with pre-DNA < 4315 copies/ml. However, CCRT group showed preferable survival in 3-year DFS (78.0% vs. 64.3%, P =0.045), and distant metastasis-free survival (DMFS; 79.3% vs. 66.1%, P = 0.048) than CTRT for high-risk patients with pre-DNA ⩾ 4315 copies/ml. According to multivariate analysis, CCRT was considered as a protective factor for DMFS in high-risk group. However, CCRT embraced a higher incidence of hematologic toxicities than CTRT during entire radiotherapy.

Conclusion(s):

For low-risk patients, CTRT may be superior to CCRT due to similar survival outcomes and lower incidence of toxicities. Pre-DNA may be a useful predictor to guide individualized concurrent therapy during IMRT in LA-NPC.