Format: Abstract

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Imbalance in DNA repair machinery is associated with BRAF^{V600E} mutation and tumor aggressiveness in papillary thyroid carcinoma.

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Abstract

The involvement of alterations in MLH1, an essential mismatch repair component, in BRAF^{V600E} mutated papillary thyroid carcinoma (PTC) has been suggested to be associated with features of tumor aggressiveness. Thirty-two PTC and surrounding normal thyroid tissues were evaluated for 11 representative DNA repair genes expression. BRAF^{V600E} mutational status assessment and clinicopathological correlations were evaluated for their gene and protein expression. BRAF^{V600E} PTC is associated with lower levels of XPD and MLH1 gene expression. Decrease in MLH1 and XPD mRNA levels in BRAF^{V600E} PTC (but not their protein products) are associated with predictors of poor patient outcomes. Considering the complete subset of patients, MGMT and XRCC2 genes were shown down and upregulated, respectively, in PTC tissues. Low expression of MGMT gene and weak XRCC2 protein expression were correlated with characteristics of tumor aggressiveness. These results suggest that an imbalance in DNA repair gene expression in PTC is associated with aggressive clinicopathological features and BRAF^{V600E} mutation.

KEYWORDS: BRAF(V600E); DNA repair; Papillary thyroid cancer; Prognosis

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