00105 Interleukin-13 Receptor Alpha 2 Is Differentially Regulated in Papillary Thyroid Carcinoma Versus Follicular Thyroid Carcinoma

Chong Siao Ting, Catherine Kok, Guan Shou Ping , Hu Jiancheng , Paula Lam, Joanne Ngeow, Lim Cindy

National Cancer Centre Singapore

Aims: Thyroid cancer is the most common cancer in the endocrine system. The interleukin-13 receptor alpha2 (IL-13Rα2) is highly expressed in glioblastoma multiforme (GBM) and it binds to EGFRvIII lead to activation of MAPK signaling pathways. Combination of multiple primary malignancies that involved GBM and thyroid cancer is very rare and the pathological role of this receptor in thyroid cancer has not been reported. Our objective is to evaluate the expression of IL-13Ra2 in thyroid carcinoma and to elucidate the underlying molecular mechanisms on how the IL-13Rα2 drives the progression of thyroid cancer.

Methodology: The immunochemical staining of IL-13Rα2 on tissue microarray of 137 thyroid carcinoma tumors was performed to evaluate the IL-13Rα2 expression and associations with staining scores between cancer subtypes, T stage, N stage, age and sex. The differential expression of IL-13Ra2 in papillary thyroid carcinoma was further validated using thyroid cancer cell lines by in-vitro assays including cell viability assay, cell cycle analysis and transwell migration assay.

Result: The statistical analysis revealed that expression of IL-13Rα2 was significantly correlated with advanced tumor T stage (pT3 / pT4; p=0.001) and regional lymph node metastasis (pN1; p<0.001). Moreover, the staining scores of IL-13Ra2 is significantly higher in papillary thyroid carcinoma (PTC) compared to follicular thyroid carcinoma (FTC) (p<0.001) and it correlated with advanced tumor stage (pT3 / pT4; p=0.028). The differential expression of IL-13Ra2 in PTC was further validated using thyroid cancer cell lines and is consistent with our findings from the CCLE databases. We demonstrated that knockdown of IL-13Rα2 significantly reduced cell viability and cell migration in PTC cell lines. Moreover, knockdown of IL-13Ra2 in PTC significantly reduced epithelial-mesenchymal transition (EMT) markers including Ncadherin, Vimentin and Snail in both mRNA and protein level.

Conclusion: The IL-13Ra2 is differentially regulated in PTC and is involved in cell migration via enhancing epithelial mesenchymal transition.