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Use of BRAF V600E mutation in the prognostication of thyroid cancer

Thyroid cancer is a common endocrine malignancy with a rapidly rising incidence in many countries in recent years. Most cases of thyroid cancer have a good prognosis, but some seem to be bound to poor outcomes with increased disease recurrence, treatment refractoriness, and mortality. Conventional approach to risk stratification of thyroid cancer is solely based on clinicopathological criteria, which has proven tobe often ineffective. An area that is revolutionizing the risk stratification and hence management of thyroid cancer is the clinical translational research onprognostic molecular markers in thyroid cancer, as best exemplified by BRAFV600E mutation. Numerous studies have demonstrated a strong association of BRAF V600E mutation with poor clinicopathological characteristics of PTC, such as lymph node metastasis, extrathyroidal invasion, advanced tumor stages, tumor recurrence, and patient mortality, establishing a remarkable prognostic value of this molecular marker can be used even preoperatively to assist risk stratification and surgical and medical managements at an early stage of the treatment of thyroid cancer. The use of the recently discovered TERT promoter mutations in combination with BRAF mutation makes even more effective this molecular marker-based risk stratification and hence tailored management of thyroid cancer. Our group has played a leading role in the last 10 years in the discovery and characterization of these prominent molecular markers in thyroid cancer. This presentation will provide a comprehensive discussion on this exciting clinical translational research area of thyroid cancer.

Biography

Mingzhao Xing, MD, PhD, is Professor of Medicine, Oncology and Pathology, Co-Director of the Thyroid Tumor Center, and Chief of the Laboratory for Cellular and Molecular Thyroid Research at the Johns Hopkins University School of Medicine. He subsequently completed his medical residency at the Greater Baltimore Medical Center and clinical fellowship in endocrinology and metabolism at the Johns Hopkins Hospital before joining the Johns Hopkins endocrine faculty. Dually certified in Internal Medicine and Endocrinology, he practices clinical endocrinology as a subspecialty consultant and teaching attending at the Johns Hopkins Hospital while leading a research laboratory there focused on thyroid studies as a physician scientist. Supported by the American Cancer Society and NIH R0-1 grants, his laboratory has been studying molecular, genetic, and epigenetic mechanisms of thyroid cancer and their clinical translation. He has published extensively in prestigious journals including *Journal of Clinical Endocrinology, JAMA, The Lancet, and Nature Reviews Cancer*. He is co-holder of the USA patent on the initial discovery and clinical characterization of the BRAF V600E mutation in thyroid cancer. He received various awards, such as the Maryland Innovator Award, American Cancer Society's RSG Award and many more.

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