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TERT, *BRAF* Mutations Mean Poor Papillary Thyroid Cancer Outcomes

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VICTORIA, British Columbia — The presence of a telomerase reverse transcriptase (*TERT*) promoter mutation, combined with the more common *BRAF* mutation, is associated with an increased risk of poorer outcomes in papillary thyroid cancer (PTC), particularly in older patients, according to new research.

"We confirmed that *TERT* promoter mutations are found in about 15% of *BRAF*-mutated PTC," said senior author Barbara Jarzab, PhD, MD, of the department of nuclear medicine and endocrine oncology, Maria Sklodowska-

Curie Memorial Cancer Center and Institute of Oncology Gliwice Branch, Gliwice, Poland, in presenting the findings here at the [2017 Annual Meeting of the American Thyroid Association](#).

"In older patients, over the age of 45, the coexistence of *BRAF/TERT* promoter mutations better separates patients with worse outcome than *BRAF* mutation alone," Dr Jarzab explained.

While PTC is typically associated with excellent prognosis in the majority of patients, approximately 15% to 20% have recurrence or persistent disease.

Among those patients, the *BRAF*^{V600E} mutation has been identified as a predictor of poorer outcomes; however, the clinical utility of the mutation is limited because it is highly common.

Meanwhile, recent research has shown the *TERT* promoter mutation to be present in approximately 10% of differentiated thyroid cancers (*Endocr Relat Cancer*. 2014;21:[825-830](#)).

And another study published earlier this year further showed that among six poor prognostic markers for PTC, the combination of *BRAF* and *TERT* was seen as likely the most aggressive (*Endocr Relat Cancer*. 2017;24:[41-52](#)).

Asked to comment on the new findings from Poland, Angela M Leung, MD, an assistant professor of medicine with the division of endocrinology, diabetes, and metabolism at the University of California, Los Angeles David Geffen School of Medicine, who comoderated the session at the ATA meeting, said these results are an important addition to the advancement of research of molecular markers in helping with the treatment of thyroid cancer.

"Molecular markers, such as *BRAF* and *TERT* mutations, have substantially changed how we manage patients with thyroid nodules and thyroid cancer in the past several years," Dr Leung told *Medscape Medical News*.

TERT Promoter Mutations Detected Only in Those > 45 Years

To better understand the prevalence of *TERT* promoter mutations in *BRAF*-mutated PTC and their prognostic significance, Dr Jarzab and her colleagues are conducting a DNA analysis on 200 *BRAF*-mutation confirmed tissue samples from PTC tumors.

Of 88 samples that have been evaluated for *TERT* mutation to date, 84% were from female patients, with a median age of 50 and a median follow-up of 31 months.

Most individuals (86; 97%) were treated with a total thyroidectomy, including 54 (61%) with central lymph-node dissection, 15 (17%) with lateral neck dissection, and 69 (78%) also received radioiodine treatment.



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