



THYROID CANCER

Increasing rate of *BRAF* gene mutation in patients with papillary thyroid cancer

BACKGROUND

The number of patients with thyroid cancer has been rapidly increasing over the past 10 years. The reason for this increase in thyroid cancer is still unclear. Mutations in certain cancer-associated genes can be seen in thyroid cancer. In particular, mutations in the *BRAF* gene are seen in a large percentage of papillary cancers. This study looked at presence of mutations in the *BRAF* gene in papillary cancer over the last 15 years.

THE FULL ARTICLE TITLE:

Mathur et al. Higher rate of *BRAF* mutation in papillary thyroid cancer over time: A single-institution study Surgical results of thyroid nodules according to management guideline based on BRAF-V600E mutation status. *Cancer*. Mar 15, 2011[Epub ahead of print] doi:10.1210/jc.2010-1082.

SUMMARY OF THE STUDY

The authors studied 628 patients with papillary cancer seen between 1991–2005. The presence of *BRAF* mutations were examined in the pathology specimens from these patients and the results separated into the following 5-year periods: 1991–1995, 1996–2000 and

2001–2005. Age at diagnosis, sex, ethnicity and cancer stage were not different between these 3 groups. The frequency of *BRAF* mutation was higher (88%) in patients diagnosed between 2001–05 as compared to those diagnosed between 1991–1995 (51%) or 96–2000 (43%).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that the frequency of mutations in the *BRAF* gene in patients with papillary thyroid cancer increased during the last 15 years. This suggests that an increase in *BRAF* gene mutation may be a cause for the increasing number of patients with papillary thyroid cancer. It is not known what is the cause for this increase in *BRAF* gene mutation. In general, radiation exposure does not appear to increase the frequency of *BRAF* gene mutation. Current research is looking at toxic chemicals our environment as potential causes.

— Jamshid Farahati, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer — the most common type of thyroid cancer.

Cancer-associated genes — these are genes that are normally expressed in cells. Cancer cells frequently have mutations in these genes. It is unclear whether mutations in these genes cause the cancer or are just

associated with the cancer cells. The cancer-associated genes important in thyroid cancer are *BRAF*, *RET/PTC* and *RAS*.

***BRAF* gene** — this is gene that codes for a protein that is involved in a signalling pathway and is important for cell growth. Mutations in the *BRAF* gene in adults appear to cause cancer.