



THYROID CANCER

BRAF mutation is not an independent predictor of spread of thyroid cancer to the lymph nodes the classical variant of papillary thyroid cancer

BACKGROUND

Thyroid cancer is the fastest rising cancer in women. Papillary cancer is the most common type of thyroid cancer. While the prognosis of papillary cancer is excellent, in some patients the cancer is more aggressive and spreads to the lymph nodes early. Analysis of genetic mutations in papillary cancer reveals one mutation, BRAF V600E, may be associated with a more aggressive course. This mutation can be detected on thyroid biopsies prior to surgery. In general, there is controversy regarding the surgical treatment of papillary cancer as to how extensive the initial surgery should be. Specifically, the issue is whether to remove only lymph nodes that appear abnormal by ultrasound or at the time of surgery or to remove all lymph nodes found in the central neck (i.e. behind and around the thyroid), which is termed prophylactic surgery. The aim of this study was to determine if the presence of the BRAF mutation predicted the spread of the cancer to the lymph node in the central neck. If it did, then the BRAF mutation status could be used to justify removing all of the lymph nodes in the central neck at the time of the initial surgery.

THE FULL ARTICLE TITLE

Li C et al. Does BRAF V600E mutation predict aggressive features in papillary thyroid cancer? Results from four endocrine surgery centers. *J Clin Endocrinol Metab* 2013;98:3702-12. Epub August 22, 2013.

SUMMARY OF THE STUDY

The study included 388 patients who underwent surgery for papillary cancer between January 2009 and December 2011 at four endocrine surgery centers (Mayo Clinic, University of Michigan, Cornell and Johns Hopkins). All patients had lymph nodes removed from the central neck.

In 76% of patients this was prophylactic surgery, while there was evidence of lymph node involvement prior to surgery in 24% of patients. The patients were divided into three groups based on the pathology: classical variant papillary cancer (315 patients), follicular variant papillary cancer (41) and aggressive variant papillary cancer (32).

The BRAF mutation prevalence was found to be 80.3% in the classical variant, 39% in the follicular variant and 87.5% in the aggressive variant papillary cancer. Analysis of all of the groups found that BRAF mutation, cancer size >2 cm and extension of the cancer outside of the thyroid were predictors of spread of the cancer to the lymph nodes. When only the classical papillary cancer was analyzed, there was no significant association between BRAF mutation and spread of the cancer to the lymph nodes.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

BRAF mutation appears to be an independent predictor of spread of the cancer to the lymph nodes in the central neck only in those patients with more aggressive types of papillary cancer and not in the most common classical variant. Because of this, more studies are needed the BRAF mutation can be considered a reliable factor to guide the surgical treatment of patients with papillary cancer.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: <http://www.thyroid.org/cancer-of-the-thyroid-gland>

Thyroid Surgery: <http://www.thyroid.org/why-thyroid-surgery/>

continued on next page



THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

BRAF gene: this is gene that codes for a protein that is involved in a signaling pathway and is important for cell growth. Mutations in the BRAF gene in adults appear to cause 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.

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

Thyroid fine needle aspiration biopsy (FNAB): a simple procedure that is done in the doctor's office

to determine if a thyroid nodule is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

Lymph node: bean-shaped organ that plays a role in removing what the body considers harmful, such as infections and cancer cells.

Central neck compartment: the central portion of the neck between the hyoid bone above and the sternum and collar bones below and laterally limited by the carotid arteries.

Prophylactic central neck dissection: careful removal of all lymph nodes in the central compartment of the neck, even if no obvious cancer is apparent in these lymph nodes.