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THYROID CANCER

The time it takes for lung metastases in thyroid cancer may allow more appropriate selection of patients for aggressive chemotherapy

BACKGROUND

While most patients with thyroid cancer do well and most do not have spread of thyroid cancer outside of the neck, it is known that patients with thyroid cancer that spreads to the lungs (metastasis) tend to have shorter survival. This is especially true for older patients, for those with large sized cancer metastases and if the thyroid cancer is resistant to radioactive iodine therapy and seen as active on PET scans. While these factors can help physicians predict cancer growth, it really is not known how fast an individual patient's metastatic thyroid cancer will grow. Some patient's lung metastases will grow very slowly over time and will not be a problem for a long time. Other patients will have faster growing lung metastases and will require oral chemotherapy drugs to try to stop the cancer growth. The oral chemotherapy drugs that are most effective are called multikinase inhibitors (MKIs). However, MKIs have a lot of side effects so should be reserved for those at highest risk of dying of their cancer. The authors of this study try to predict which patients will have better survival based on the amount of cancer and by measuring the rate of growth of the metastases on computed tomography (CT), also referred to as cancer-volume-doubling times. Some of the patients were treated with MKIs and some were not. They found that the cancer volume doubling time can help predict overall survival and may help guide physicians when to start using MKIs.

THE FULL ARTICLE TITLE

Sabra MM et al Tumor volume doubling time of pulmonary metastases predicts overall survival and can guide the initiation of multikinase inhibitor therapy in patients with metastatic, follicular cell-derived thyroid carcinoma. Cancer 2017;123:2955–64. Epub April 3, 207.

SUMMARY OF THE STUDY

The authors reviewed 199 cases of patients with thyroid cancer who also had lung metastases between the years 1992 and 2016. All the patients had been treated with surgery and radioactive iodine therapy. Some patients were treated with additional surgery, radioactive iodine therapy, radiation treatment and/or oral chemotherapy drugs with MKIs. After reviewing the cases, 88 patients met the criteria needed to be included in the study. All patients had to have at least 4 CT scans, the largest lung cancer had to be >5 mm and they had to have adequate amount of follow up information. The average age of patients at the time of diagnosis of distant metastases was age 54. A total of 43 patients had papillary thyroid cancer, 10% follicular or follicular variant of papillary cancer, 9% Hurthle cell cancer, and 3% poorly differentiated thyroid cancer. A total of 72% of patients had <1cm lung metastases at the time of diagnosis, 52% took up iodine and 46% were active on PET scan. A total of 22% of patients had metastatic thyroid cancer to other places in the body in addition to the lungs. The average follow up was 8.5 years and 85% of the patients had progression of their disease. They used the average doubling time of the two largest lung nodules for the analysis.

The patients with a cancer volume doubling time of less than one year had the poorest survival. Of 15 patients with <1 year cancer volume doubling time, 8 were treated with MKIs and 7 were not. The 2 year survival was better for those treated (88% versus 43%) in those not treated with MKIs. If the cancer volume doubling time was greater than 1 year, they did not see improved survival.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that only the patients with the most aggressive and fastest growing thyroid cancer benefit from aggressive chemotherapy drugs known as MKIs even though there are significant side effects. Patients with metastatic cancer that is growing slowly do not show any benefit from MKIs. Thus, MKIs should be reserved for the patients at highest risk of dying from their thyroid cancer. This study provides a tool that physicians can use when trying to predict long-term survival of patients with thyroid cancer lung metastases as well as help guide when to start oral chemotherapy.

—Wendy Sacks, M.D.

THYROID CANCER, continued

ATA THYROID BROCHURE LINKS

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Follicular thyroid cancer: the second most common type of thyroid cancer.

Follicular variant of papillary thyroid cancer: one of the subtypes of papillary thyroid carcinoma, which has been classified to three different forms: non-invasive follicular thyroid neoplasm with papillary-like nuclear features, invasive encapsulated and infiltrative FVPTC

Cancer metastasis: spread of the cancer from the initial organ where it developed to other organs, such as the lungs and bone.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

Positron-Emission-Tomography (PET) scans: a nuclear medicine imaging test that uses a small amount of radiolabeled glucose to identify cancer. Since cancer cells are more active than normal cells, the cancer cells take up more of the radiolabeled glucose and show up on the PET scan. PET scans are frequently combined with CT scans to accurately identify where the cancer is located.

Tyrosine kinases: proteins that are overactive in many of the pathways that cause cells to be cancerous.

Multi-kinase inhibitors (MKIs): anticancer drugs that have been shown to be effective in thyroid cancer treatment. They work by inhibiting tyrosine kinases that cause cells to be cancerous. A drawback to these drugs are frequent side effects that limit their use.