AMERICAN THYROID ASSOCIATION
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## THYROID CANCER

# Personalized treatment of anaplastic thyroid cancer has resulted in significant improvement in survival over the past two decades

### BACKGROUND:

Unlike papillary and follicular thyroid cancer, which have a good prognosis, anaplastic thyroid cancer is a very aggressive type of thyroid cancer. Although rare, representing less than 2% of all thyroid cancers, anaplastic thyroid cancer accounts for more than half of thyroid cancer-related death every year. In the most recent analysis of the Surveillance, Epidemiology, and End Results (SEER) database (1986-2015), the average survival of patients with anaplastic thyroid cancer was only 4 months and 98-99% of patients eventually died of the cancer. Patients with anaplastic thyroid cancer usually present with a rapidly growing and locally invading neck mass, lymph node involvement and often spread to other parts of the body. This means that surgery if often not helpful. Historically, these patients have been offered comfort treatment or hospice. However, in the last several years, there has been an increasing number of clinical trials investigating targeted, combination drug therapies in patients with anaplastic thyroid cancer.

In 2014, the University of Texas MD Anderson Cancer Center developed the Facilitating Anaplastic Thyroid Cancer Specialized Treatment (FAST) team to allow fast access to a multidisciplinary, highly specialized care and cancer molecular testing, such as the BRAF V600E mutation. The program has enrolled anaplastic thyroid cancer patients in clinical trials to receive targeted combination therapies. The patients who achieve significant response to initial targeted therapy receive additional treatments, including surgery and radiation. The goal of this study was to evaluate whether there has been an improvement in the overall survival of patients with anaplastic thyroid cancer over the past two decades, given the recent advances in the field.

### THE FULL ARTICLE TITLE:

Maniakas A et al. 2020 Evaluation of Overall Survival in Patients with Anaplastic Thyroid Carcinoma, 2000-2019. JAMA Oncol Aug 6;e203362. PMID: 32761153.

### SUMMARY OF THE STUDY:

The study included 479 patients with anaplastic thyroid cancer who presented at the University of Texas MD Anderson Cancer Center between January 2000 and October 2019. The average age was 65 years (21-93 years), and 51% of the patients were men. A total of 11% patients had stage IVA, 36% stage had IVB and 53% had stage IVC anaplastic thyroid cancer at presentation, all very advanced. The patients were divided into three subgroups: January 2000-December 2013 (227 patients), January 2014-December 2016 (the FAST program started in 2014) (100 patients), and January 2017-October 2019 (surgery and radiation started to be performed after neoadjuvant therapy in 2017) (152 patients). BRAF-V600E mutation testing to guide therapy increased over time from 17% of the patients in the 2000-2013 group, to 82% of the patients in the 2014-2016 group and 97% of those in the 2017-2019 group.

The average survival was 8 months in the 2000-2013 group, 10.6 months in the 2014-2016 group, and 15.7 months in the 2017-2019 group. There was a 1-year survival improvement of 12% in the 2014-2016 group (from 35% to 47%) and 24% in the 2017-2019 group (from 35% to 59%) as compared to the initial 2000-2013 group. Similarly, there was a 2-year survival improvement of 7% in the 2014-2016 group (from 18% to 25%) and 24% in the 2017-2019 group (from 18% to 42%).

The use of targeted therapy in patients with anaplastic thyroid cancer increased over time and resulted in an improvement in ~2-fold in overall survival. The study also reported a significant increase in the use of immunotherapy in recent years, with significantly better overall survival in patients who received targeted therapy with immunotherapy versus those who received targeted therapy alone. In addition, the use of additional BRAF-directed chemotherapy before surgery since 2017 was associated with an improved overall survival (94% at 1 year) in patients with the BRAF-V600E mutation.

## THYROID CANCER, continued

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This large, single-institution study showed a significant improvement in survival of patients with anaplastic thyroid cancer over the past two decades, regardless of disease stage. This remarkable progress is attributed to advances in the care of anaplastic thyroid cancer patients, including comprehensive genetic testing and highly specialized, personalized treatment with integrated, multimodal therapies. The study highlights the importance of immediate recognition and referral of anaplastic thyroid cancer patients to specialty cancer centers of excellence.

— Alina Gavrila, MD, MMSc

### ATA THYROID BROCHURE LINKS

Anaplastic Thyroid Cancer - https://www.thyroid.org/anaplastic-thyroid-cancer/

### ABBREVIATIONS & DEFINITIONS

**Anaplastic thyroid cancer (ATC):** a very rare, but very aggressive type of thyroid cancer. In contrast to all other types of thyroid cancer, most patients with anaplastic thyroid cancer die of their cancer within a few years.

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

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

**Clinical trial:** study designed to investigate the safety and effectiveness of a new medical treatment using human subjects, who consent to participate in research.

**Molecular tests:** detect specific molecules, or biomarkers, associated with cancer in a patient's tissue and fluid samples. Molecular diagnostic tests can help to select a specific cancer therapy and monitor the results of a treatment based on changes in the biomarker level.

**Cancer-associated genes:** 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 a 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.

**Mutation:** a permanent change in one of the genes.

**Targeted therapy:** a type of cancer treatment that interferes with specific molecules found in cancer cells that are involved in the growth, progression, and spread of cancer.

**Immunotherapy:** a type of cancer treatment that boosts the immune system to fight cancer by detecting and destroying abnormal cells.

**SEER:** Surveillance, Epidemiology and End Results program, a nation-wide anonymous cancer registry generated by the National Cancer Institute that contains information on 26% of the United States population. Website: http://seer.cancer.gov/