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Metastasis to Stomach in a Patient with Anaplastic Thyroid Carcinoma: A Clinical Challenge

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
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Conflict of interest: None declared

Patient: Female, 71
Final Diagnosis: Anaplastic thyroid carcinoma
Symptoms: Breathlessness
Medication: —
Clinical Procedure: Total thyroidectomy along with left modified radical neck dissection
Specialty: Oncology

Objective: Unusual clinical course

Background: Anaplastic thyroid carcinoma (ATC) is an uncommon and aggressive form of human cancer. Despite advancement in multimodal therapy for patients with ATC, the prognosis remains poor. Most patients presenting with ATC have metastasis to the lungs and regional lymph nodes. Gastrointestinal tract metastasis is a rare entity observed among patients with ATC. We report a case of ATC with gastrointestinal metastasis.

Case Report: A 72-year-old euthyroid female with hypertension presented to the clinic with swelling of the neck and breathlessness. Fine needle aspiration cytology revealed colloid goiter. Positron emission tomography and computed tomography revealed hypermetabolic, lobulated mass in left hemi-thyroid, displacing trachea, and hypermetabolic lymph nodes on the left side. The patient underwent total thyroidectomy along with left modified radical neck dissection. Histopathology and immunochemistry were suggestive of ATC with thyroid transcription factor 1 (TTF-1), cytokeratin, Pax8, and C53 positive while calcitonin and thyroglobulin were negative. The patient presented with persistent nausea and vomiting during adjuvant radiation therapy. After radiation therapy, the patient underwent upper gastrointestinal endoscopy that revealed large polypoidal lesions in the stomach. No active bleeding was observed. Biopsy results confirmed it to be metastasis from ATC.

Conclusions: ATC can spread to distant sites including the gastrointestinal tract. Patients with ATC metastasis have a poor prognosis despite multimodal therapy. This is the first case of ATC with gastrointestinal metastasis reported in India.

MeSH Keywords: Carcinoma • Endoscopy, Gastrointestinal • Thyroid (USP)

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/913736

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Background

Anaplastic thyroid carcinoma (ATC) accounts for less than 5% of all thyroid malignancies. ATC accounts for nearly 50% of all deaths attributed to thyroid cancers [1]. ATC is a rare entity and there is a paucity of reports in the published literature. In most reported cases, patients suffer from pressure-related symptoms that occur due to local progression of the disease. Thus, palliative approaches, such as a tracheostomy, are required.

ATC is commonly observed among patients who are between 60 to 70 years old with an average median survival of 5 months. Nearly 20% of patients with ATC survive for a little over 12 months after one year of diagnosis [2].

The American Joint Committee on Cancer defines all the stages of ATC as stage IV due to its extremely aggressive behavior. ATC staging is divided into 3 sub-stages: IVa, IVb, and IVc. The staging is dependent on the extension of the primary tumor, the presence of any lymph node involvement, or the presence of distant metastases. In the past 6 decades, the survival rate has not increased significantly. Multimodal treatment including surgery, chemotherapy, radiation, and/or targeted therapy can be considered as a superlative strategy for improving outcomes in patients with ATC [3].

There are a few risk factors attributed to the development of ATC. In a prospective study conducted by the American College of Surgeons Commission on Cancer, 25% of patients were found to have a history of thyroid goiter, while 10% had a familial history of goiter [4].

Patients with ATC present with local symptoms at the beginning, such as central neck mass, noticeable dysphagia, hoarseness or voice change, and stridor. Patients may also present with regional symptoms, such as a noticeable lymph node mass and/or neck pain. Some of the most common systemic symptoms include weight loss, anorexia, and shortness of breath. Metastases is common in patients with ATC. As per a recent review, nearly 50% of patients have metastases at the time of presentation while nearly 25% develop metastasis during the course of the disease [5]. Lung, bone, and brain are the most common sites of metastasis [5]. We report here an unusual case of ATC with gastrointestinal metastasis.

Case Report

A 72-year-old euthyroid female with hypertension presented to the clinic with swelling of the neck and breathlessness. The patient had a family history of cancer. Her uncle was diagnosed with lung cancer.

A neck sonography revealed a 6.8×5.4×4 cm heterogeneously hypoechoic lesion with moderate internal vascularity in the left lower lobe of the thyroid. The lesion caused lateral displacement of the left common carotid artery and internal jugular vein with moderate luminal narrowing to the adjacent part of the left internal jugular vein. A fine needle aspiration cytology revealed colloid goiter in the left thyroid.

A whole-body positron emission tomography-computed tomography scan was performed. A large hypermetabolic lobulated mass lesion arising from the left hemi-thyroid was observed. The lesion caused a mass effect on the trachea, displacing it on the right side. The lesion was observed to have reached the mediastinum up to the aortic arch level as well as the prevascular region with loss of fat planes (Figure 1). Hypermetabolic lymph nodes on the left side were present. A metastatic nodule was observed in the apicoposterior segment of the left upper lobe of lungs (Figure 1). The stomach and bowel loops were unremarkable and showed physiological uptake of F-18 fluorodeoxyglucose.

The lesion was observed to have laterally splayed the strap muscles on the left side. A histopathological correlation was required at this stage to confirm malignant etiology. Intraoperatively, a big hard mass was seen that almost replaced the entire left node of the thyroid gland. It was displacing the trachea on the right side but could be dissected free from it. The patient underwent a total thyroidectomy and left modified radical neck dissection.

The histopathology report was suggestive of anaplastic carcinoma of the thyroid with capsular invasion and extra thyroidal extension. Three out of 22 lymph nodes dissected on the left side showed the presence of disease without any extracapsular extension. The pathologic stage was confirmed to be pT3bN1bM1. As per the eighth edition of the American Joint Committee on Cancer staging manual, the patient had stage IVc anaplastic thyroid carcinoma.

A follow-up ultrasonography revealed an ill-defined septated collection at the left thyroid bed.

Prophylactic external beam radiotherapy (60 Gy in 30 fractions) was given to the patient covering the neck and superior mediastinum. During adjuvant radiation therapy, the patient presented with persistent nausea and vomiting. The patient did not respond to proton pump inhibitors. Post- radiation therapy, the patient underwent upper gastrointestinal endoscopy, where 7 to 8 large polypoidal lesions were observed in the stomach (Figure 2). No active bleeding was observed. Biopsy results confirmed the metastasis was from ATC. The length of survival of the patient was 2.5 months from the date of presentation. The patient died due to hemorrhagic shock.

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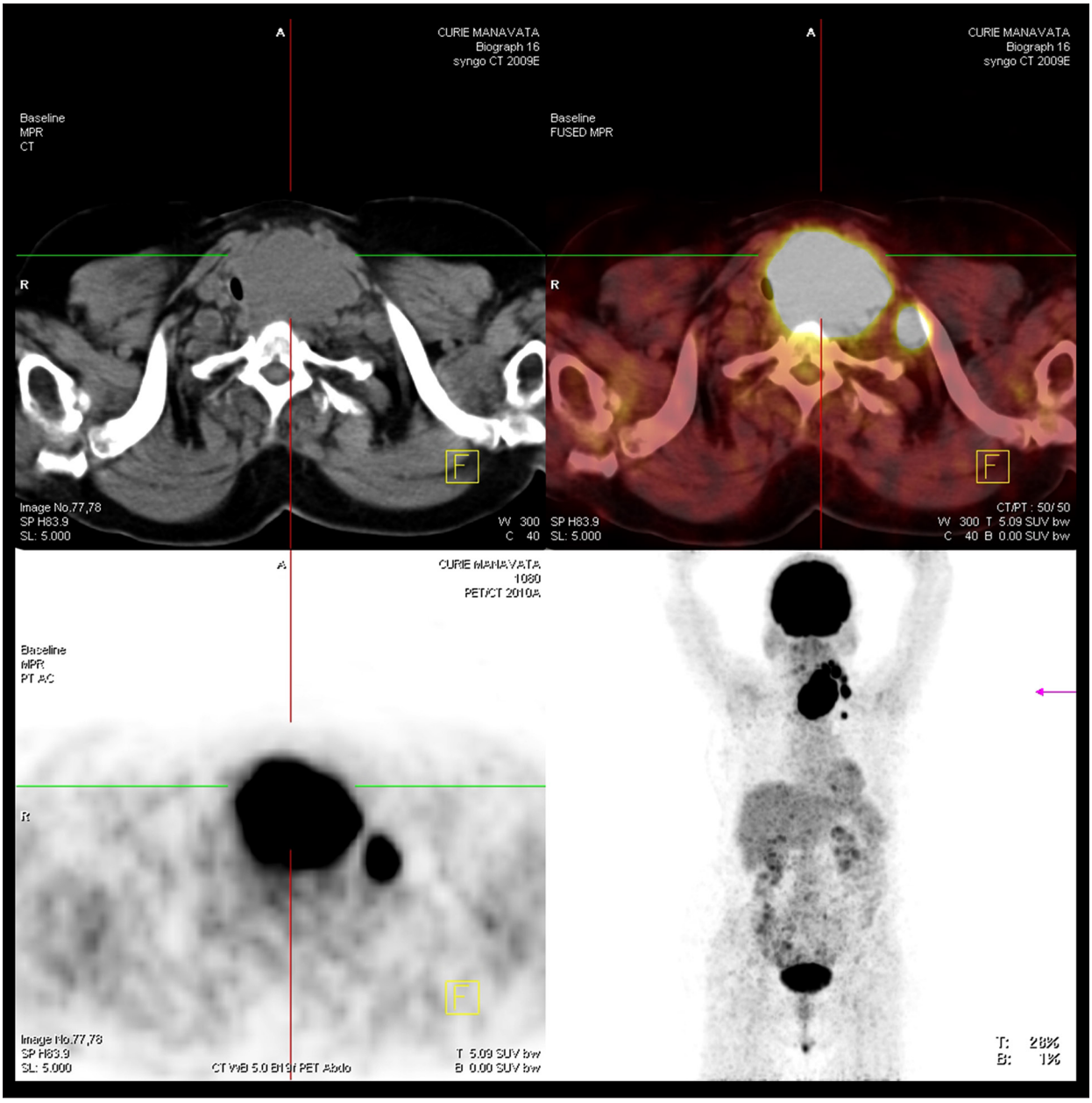

Figure 1. Positron emission tomography image: large hypermetabolic lobulated mass lesion arising from the left hemi-thyroid with hypermetabolic lymph nodes on left side.

Discussion

ATC is an uncommon, rapidly growing neoplasm. It is characterized by a poor prognosis with a mean survival time of 4 to 7 months [6,7]. An estimated 20–50% of patients who present with early tumor dissemination report to be positive for distant metastases, while 90% report to be positive for adjacent tissue invasion at the time of presentation [8]. Based on current evidence, the most common site of metastases in patients with ATC include the lung and the bone. However, in some cases, the adrenals, heart, pleura, pancreas, or even kidneys could be involved [9]. In a hallmark paper, common metastases sites of ATC were observed in adrenals (24%), heart (18%), pleura (29%), pancreas (4%), and kidneys (13%) [10]. The frequency of metastases was as follows: gastric (4%), mesentery or peritoneum (13%), and jejunum (2%) [10].

A case of ATC with isolated metastasis to the gastrointestinal region is extremely rare with only 2 cases reported in the PubMed database [9,11]. In the patient case reported by Hernandez et al., there was no gross extra thyroidal extension observed [11].

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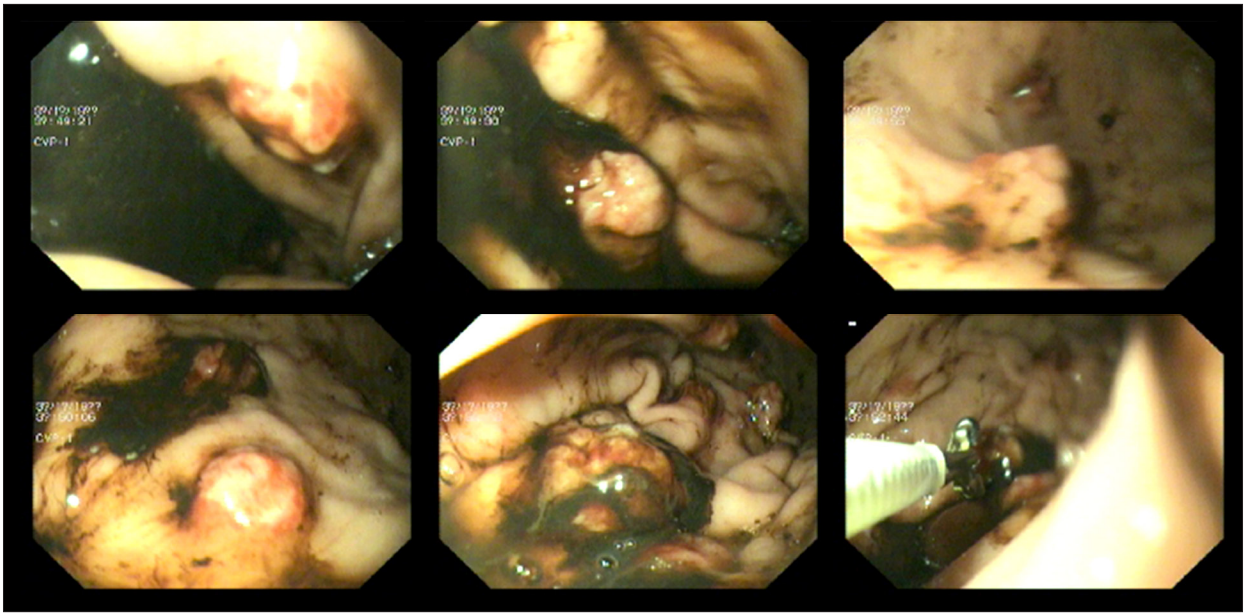

Figure 2. Multiple polypoidal lesions in stomach.

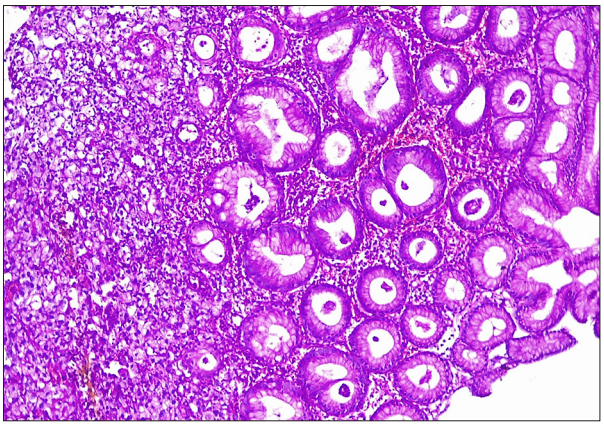

Figure 3. Sheets and islands of undifferentiated cells with eccentric nucleus and foamy cytoplasm invading normal gastric mucosa surrounded by inflammatory infiltrate.

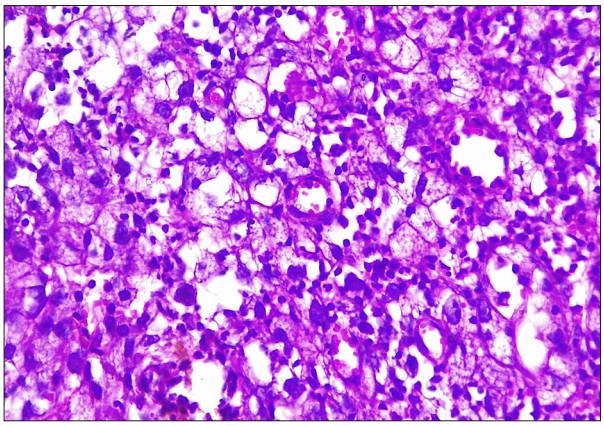

Figure 4. Cells with eccentric nuclei and melanin pigment deposition showing it to be undifferentiated.

ATC presents with local symptoms as was observed in our patient case. In the context to distant metastasis, 50% of patients would present at the time of diagnosis, while 25% would develop metastasis during the course of the disease. It is through hematogenous spread that early distant metastasis of the tumor occurs in patients with ATC.

In our patient case, sheets and islands of undifferentiated cells with eccentric nucleus were observed (Figures 3, 4). Immunochemistry was suggestive of ATC with thyroid transcription factor 1 (TTF-1), cytokeratin, Pax8, and C53 positive while calcitonin and thyroglobulin were negative. Immunohistochemistry can complement histopathology for accurate diagnosis of uncommon tumors [12]. Radiation therapy is a well-tolerated treatment approach with or without surgery or chemotherapy in the context of loco-regional control for patients with ATC [13]. Multimodal treatment comprised of surgery and combined with radiation when feasible is recommended [14]. As per the American Thyroid Association guidelines, there is no specific data from randomized control trails for the treatment of patients with ATC. The treatment recommendations should be based on the experience of non-randomized trials, case series, or epidemiological databases [15].

Conclusions

ATC still remains a fatal solid tumor and has the most aggressive progression among thyroid malignancies. Prognosis has been reported to be better in younger patients and in those

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without distant metastasis. In this study, we reported a patient case of ATC with gastrointestinal metastasis. Patients with ATC metastasis have a poor prognosis despite multimodal therapy. This is the first case of ATC with gastrointestinal metastasis reported in India.

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Conflict of interest

None.

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