Original Research Paper

Volume - 15 | Issue - 04 | April - 2025 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Radio-Diagnosis

ANAPLASTIC CARCINOMA OF THE THYROID WITH NODAL AND LUNG METASTATSES: RADIOLOGICAL INSIGHTS INTO A GRIM DIAGNOSIS-A CASE REPORT

Dr. Annesha Majumdar* Post Graduate Trainee, Department of Radiodiagnosis, Agartala Government Medical College & GBP Hospital. *Corresponding Author

Dr. Pulkit Kumar Santoshi Senior Resident, Department of Radiodiagnosis, Agartala Government Medical College & GBP Hospital.

ABSTRACT Anaplastic carcinoma is an extremely rare and aggressive malignancy, often arising from pre-existing differentiated thyroid carcinomas. It is associated with poor prognosis and limited treatment options. We present the case of a 65-year-old female patient who presented with a rapidly enlarging neck mass and symptoms of airway obstruction. Clinical examination and imaging revealed an infiltrative thyroid mass. Fine-needle aspiration cytology (FNAC) suggested malignancy, and histopathology confirmed the diagnosis of anaplastic carcinoma. The patient was managed with a combination of palliative radiotherapy and chemotherapy, as surgical resection was not feasible due to extensive local invasion. Despite aggressive treatment, the disease progressed rapidly, and the patient succumbed to the illness within three months of diagnosis. Anaplastic carcinoma represents a diagnostic and therapeutic challenge due to its aggressive nature and dismal prognosis. Early diagnosis and a multidisciplinary approach are essential for optimizing patient care.

KEYWORDS : Anaplastic Carcinoma, Thyroid Cancer, Aggressive Malignancy, Case Report

INTRODUCTION

Anaplastic carcinoma, a rare variant of thyroid cancer, accounts for less than 2% of all thyroid malignancies. It predominantly affects elderly individuals and is characterized by rapid progression, poor differentiation, and resistance to conventional therapies. This case report highlights the clinical presentation, diagnostic challenges, and management strategies for this formidable malignancy.

Case Presentation

Clinical History:

A 70-year-old postmenopausal female presented to the ENT departement with a three-month history of a rapidly growing diffuse swelling over the neck region.She also had complaints of dysphagia, hoarseness of voice and backache . There was history of significant weight loss over the past 3 months.There was no prior history of thyroid disease or radiation exposure.

Examination:

- General physical examination was within normal limits.
- On local examination, a firm, irregular, and fixed mass was palpated in the anterior neck region. Cervical lymphadenopathy was noted.
- Thyroid function tests were deranged with elevated TSH(12 mU/L) and decreased T3 and T4.

Radiological Investigations:

- X-ray soft tissue neck(AP/LAT):A mass lesion was noted in the anterior neck regionextending from C4 to C7 levels with calcification (Fig-1B) causing mild compression and deviation of trachae to right side(Fig-1A).
- Ultrasound: Gross architectural distortion of thyroid parenchyma replaced by an ill-defined solid-cystic mass of heterogenous echotexture (Fig-2A and 2B) with multifocal punctate calcific foci (Fig-2C) seen in the left lobe extending to the right lobe with invasion into the larynx(Fig-2E) .There is internal vascularity on colour doppler.There are multiple conglomerated lymph nodes seen in levels 3 and 4 with loss of normal architexture seen in the supraclavicular region(Fig-2D)
- CT Scan: Large ill-defined heterogeneously hypoechoic lesion(Fig-3A) with dense calcific foci arising from the left hemithyroid and extending to the contralateral side displacing and compressing the trachea and esophagus to the right side(Fig-3B) and local invasion into the larynx .There are multiple conglomerated necrotic lymph nodes seen in the levels 3 and 4(Fig-3D) and enhancing soft tissue attenuated nodules seen in bilateral lung fields(Fig-3E and 3F).
- MRI: Ill-defined lesion of heterogenous intensity (Fig-4A and 4B) with areas of restricted diffusion (Fig-4C and 4D) seen replacing the thyroid parenchyma(left lobe>right) with tracheal deviation to the right side.
- FNAC: Smears show loose clusters of large pleomorphic cells with macronucleolus.Many spindle cells and round to oval cells with high grade nuclear features are also noted.

Management

Given the extent of local invasion and poor operability, the patient was started on palliative radiotherapy (30 Gy in 10 fractions) and systemic chemotherapy with paclitaxel and carboplatin. Supportive measures included tracheostomy for airway obstruction.

Outcome:

Despite initial symptom relief, the disease progressed, and the patient succumbed to complications of metastatic disease within three months.

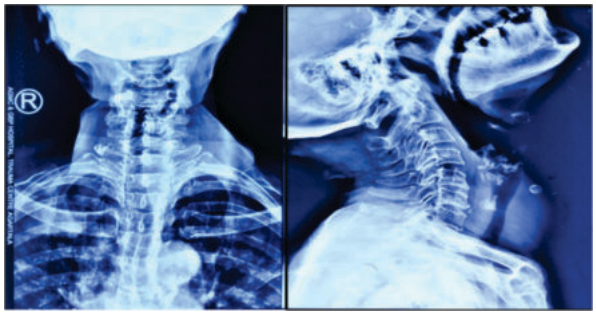

Fig-1:1A-Lesion in the anterior neck causing tracheal deviation to the right side. 1B-Calcification noted in the lesion with mild tracheal compression

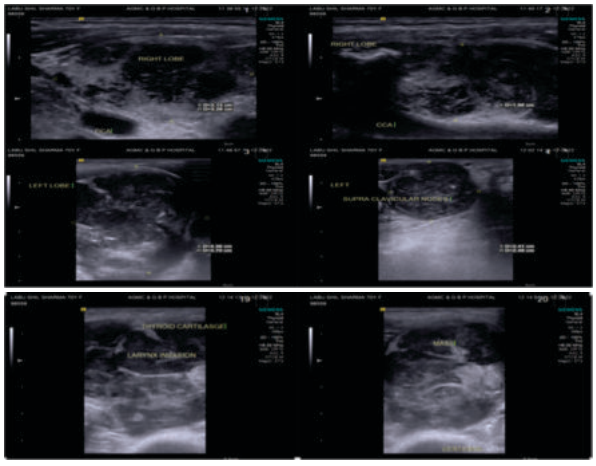

Fig-2:2A-Solid-cystic mass lesion of heterogenous echotexture. 2B-Gross architectural distortion. 2C-Multiple punctate calcific foci. 2D-

Conglomerated supraclavicular lymph nodes. 2E-Laryngeal invasion

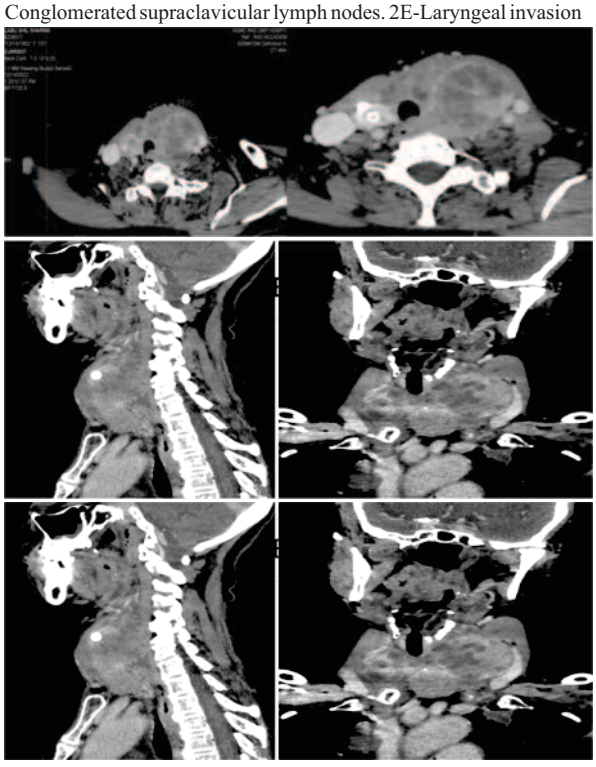

Fig-3:3A-Ill-defined heterogenously hypoechoic lesion diffusely involving the thyroid parenchyma. 3B-Tracheal deviation to right. 3C-Dense calcific foci. 3D-Supraclavicular necrotic lymphadenopathy. 3E-Subpleural nodule seen in the apical segment of right lung. 3F-Multiple enhancing nodules in bilateral lung fields.

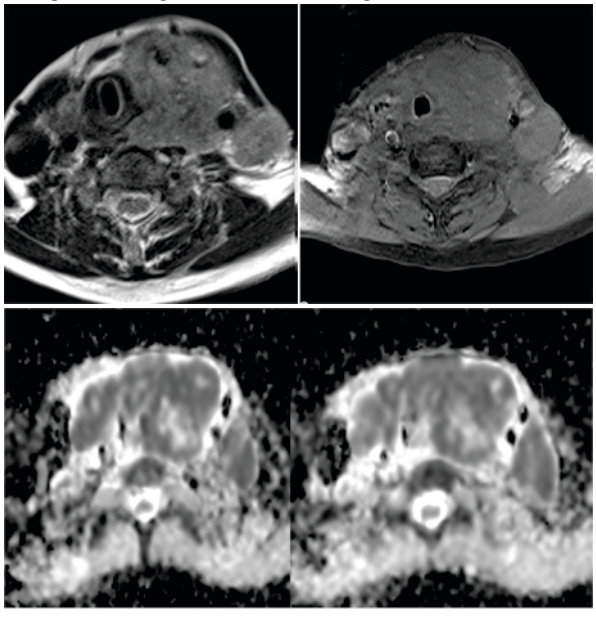

Fig-4: Ill-defined lesion of heterogenous signal intensity diffusely involving the thyroid parenchyma on 4A-T2WI,4B-T1WI and areas of diffusion restriction on 4C and 4D-DWI

DISCUSSION

Early diagnosis is crucial but challenging due to its rapid growth and overlap with other thyroid pathologies. Imaging and FNAC are critical diagnostic tools, while histopathology remains the gold standard.

Anaplastic thyroid carcinoma (ATC) comprise for 1%–2% of all thyroid malignancies, but causes approximately 50% of deaths from thyroid cancer.[1-3] Despite modern therapies, it remains a highly aggressive disease among all malignancies. Historically, mean survival was approximately only 5 months,[4] and 1-year survival was 20%, with 2-year survival at approximately 10%.[5] With recent advances in multidisciplinary care, median survivals have improved, though most patients are not completely cured .[6] Women are affected slightly more at a ratio of 1.5:1, with a peak incidence in the sixth and seventh decades of life.[7,8]It arises through 2 mechanisms: de novo or from dedifferentiation of well-differentiated thyroid cancer.[9,10] ATC is characterized by local invasiveness and extensive necrosis.[11]

The typical presentation is that of a rapidly enlarging neck mass, often in older patients, resulting in contrast-enhanced CT (CECT) evaluation.[12] Symptoms due to mass effect upon the trachea and larynx are usually the presenting complaints. Direct invasion of adjacent structures, including muscle, trachea, larynx, esophagus, and recurrent laryngeal nerve, is usualy seen. Moreover , nodal metastases are seen in up to 40% of patients at diagnosis.[13] Distant metastases are present in 43% of patients, with the most common locations being the lung (78%), adrenals (24%), liver (20%), and brain (18%).[13] The most common cause of death is most commonly the result of advanced pulmonary metastatic disease (35%), followed by airway compromise (16%), tumor-related hemorrhage (14%), and cardiac failure (11%).[8]

Due to the limitations of USG in studying larger masses, CT is much more useful in characterising the local extent of the disease and detecting lymph node metastases. MRI is superior to CT scan for detecting invasion of vascular, airway and bony structures.[14,15]

Treatment options include surgery, radiotherapy, and chemotherapy, often with limited efficacy. Early diagnosis is crucial but challenging due to its rapid growth and overlap with other thyroid pathologies. Imaging and FNAC are critical diagnostic tools, while histopathology remains the gold standard.

This case underscores the importance of a multidisciplinary approach and highlights the need for continued research to improve outcomes in anaplastic carcinoma.

CONCLUSION

Anaplastic carcinoma is a rare but highly aggressive malignancy with limited therapeutic options. The presence of a rapidly enlarging necrotic thyroid mass especially in combination with local organ invasion and cervical lymphadenopathy should raise suspicion for Anaplastic thyroid carcinoma.

Early recognition and a tailored, multidisciplinary treatment plan are essential to improve patient quality of life and extend survival.

REFERENCES

1. Are C, Shaha AR. Anaplastic thyroid carcinoma: biology, pathogenesis, prognostic factors, and treatment approaches. Ann Surg Oncol 2006;13:453–64
2. Bogsrud TV, Karantanis D, Nathan MA, et al. 18F-FDG PET in the management of patients with anaplastic thyroid carcinoma. Thyroid 2008;18:713–19
3. Ragazzi M, Ciarrocchi A, Sancisi V, et al. Update on anaplastic thyroid carcinoma: morphological, molecular, and genetic features of the most aggressive thyroid cancer. Int J Endocrinol 2014;2014: 790834
4. Smallridge RC, Ain KB, Asa SL, et al. American Thyroid Association guidelines for management of patients with anaplastic thyroid cancer. Thyroid 2012;22:1104 –39
5. Smallridge RC, Copland JA. Anaplastic thyroid carcinoma: pathogenesis and emerging therapies. Clin Oncol (R Coll Radiol) 2010;22: 486 –97
6. Rao SN, Zafereo M, Dadu R, et al. Patterns of treatment failure in anaplastic thyroid carcinoma. Thyroid 2017;27:672–81
7. Aschebrook-Kilfoy B, Ward MH, Sabra MM, et al. Thyroid cancer incidence patterns in the United States by histologic type, 1992– 2006. Thyroid 2011;21:125–34
8. Neff RL, Farrar WB, Kloos RT, et al. Anaplastic thyroid cancer. Endocrinol Metab Clin North Am 2008;37:525–38, xi
9. Mohebati A, Dilorenzo M, Palmer F, et al. Anaplastic thyroid carcinoma: a 25-year single-institution experience. Ann Surg Oncol 2014;21:1665–70
10. Haddad RI, Lydiatt WM, Ball DW, et al. Anaplastic thyroid carcinoma, version 2.2015. J Natl Compr Canc Netw 2015;13:1140 –50
11. Hahn SY, Shin JH. Description and comparison of the sonographic characteristics of poorly differentiated thyroid carcinoma and anaplastic thyroid carcinoma. J Ultrasound Med 2016;35:1873–79
12. Cabanillas ME, McFadden DG, Durante C. Thyroid cancer. Lancet 2016;388:2783–95
13. Kelil T, Keraliya AR, Howard SA, et al. Current concepts in the molecular genetics and management of thyroid cancer: an update for radiologists. Radiographics 2016;36:1478 –93
14. Pasieka JL. Anaplastic thyroid cancer. Curr Opin Oncol 2003;15: 78-83
15. Green LD, Mack L, Pasieka JL. Anaplastic thyroid cancer and primary thyroid lymphoma: a review of these rare thyroid malignancies. J Surg Oncol 2006;94:725-36.