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Anaplastic Thyroid Carcinoma: A 20-year Institutional Review

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Introduction

Anaplastic thyroid cancer (ATC) is an extremely aggressive, undifferentiated thyroid cancer with nearly 100% mortality rate. Despite accounting for only 1-2% of all thyroid cancers, it causes over half of all thyroid cancer-related deaths, with a median survival of 5 months and one-year survival rates of 20% to 50%.[1] Here we will examine the clinical features and survival outcomes of ATC patients within our unit over the past two decades.

Materials and Methods

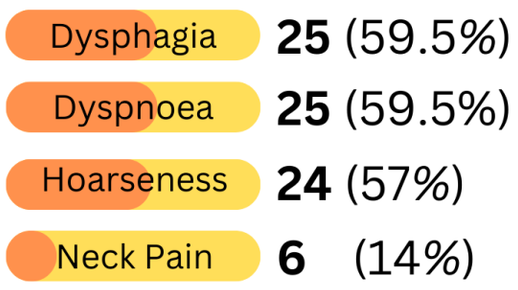
We retrospectively reviewed all ATC diagnosed at Hospital Raja Perempuan Zainab II, Kota Bharu, Malaysia from 2004 to 2023. Patients were identified from our lab database and their clinical details were obtained from their medical records.

Institutional Review

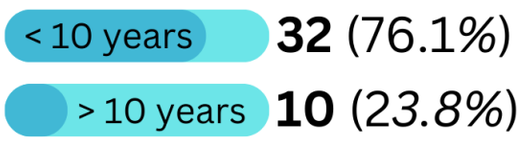
Our lab database identified 42 patients with a median age of 62 years, ranging from 36 to 81 years. ***Only one patient had a history of papillary thyroid cancer***.

Male **16** (*38%*)

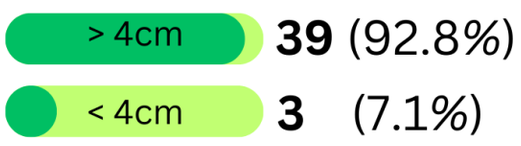
Female **26** (*61.9%*)



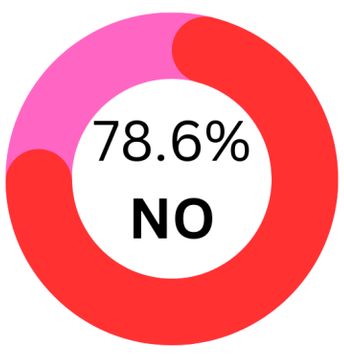
Presenting Symptoms



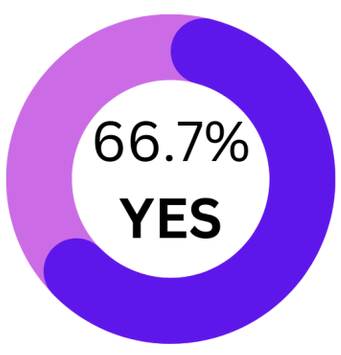
Duration of Goitre



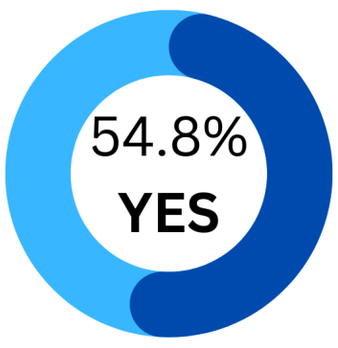
Tumor Size



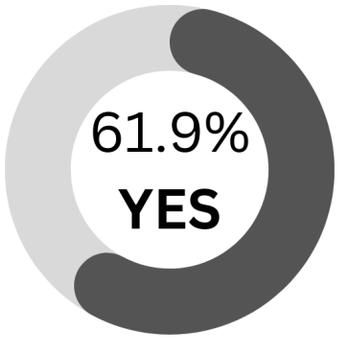
Toxic Symptoms



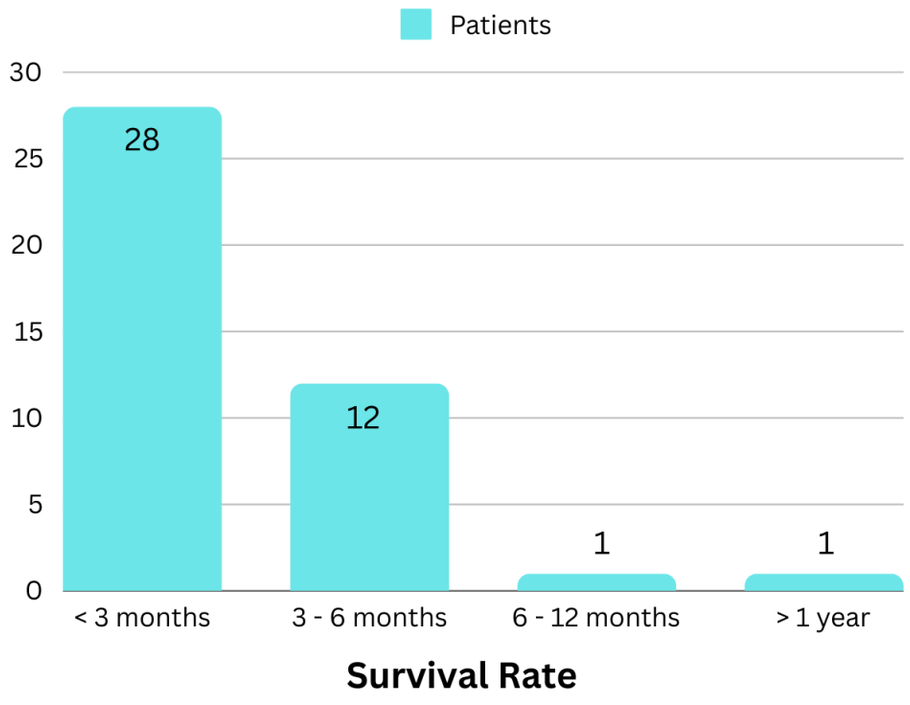
Extrathyroidal Extension



Lymph Node Mets



Distant Metastasis



Survival Rate

In view of all patients presenting late, ***none of the patients received curative treatment***. Only one patient underwent a single fraction haemostatic radiotherapy for her bleeding fungating tumour.

Discussion

Incidence

In the US, SEER data shows 0.9 to 1.2 cases per 1,000,000 with a median survival of 3-4 months.[2] ***At our center, ATC constitutes 1.2% of thyroid cancers.*** Patients are typically older, with a mean age of 65-70.5 years[2], and more frequently female, which are reflected in our series.

Presentation

ATC often presents as a rapidly enlarging neck mass or metastasis.[3] Symptoms are due to compression or invasion of upper airway or digestive tracts. Most of our patients had goiters >4cm, resulting in higher incidence of these symptoms. Metastatic disease at presentation was 61.9%, higher than other studies[3], likely due to their low socioeconomic status.[1] We suspect the lower incidence of prior/concurrent DTC in our series (2.4%) compared to the literature (23-58%)[4] is due to their late presentation with advanced disease, excluding them from surgery that would have allowed for more thorough histopathological examination of the entire thyroid gland.

Diagnosis

Fine needle aspiration (FNA) is the preferred initial biopsy and diagnoses ATC in over 60% of cases.[1] In our series, FNA was used for most patients, with ultrasound-guided core biopsy for larger goitres (9.5%). ATC shows varied cytopathology, with common patterns being sarcomatoid, pleomorphic giant cell, and squamoid.[4] Immunohistochemistry often shows positivity for Cytokeratins AE1/AE3 and PAX 8 and negative for thyroid-transcription factor 1 (TTF-1) and thyroid-specific proteins like thyroglobulin (TG).[4]

Treatment

ATC management is tailored based on stage, prognosis, and patient preferences. Multimodal therapy (surgery, chemotherapy, radiotherapy, targeted therapy) improves survival.[1] Surgery is crucial for stages IVA and IVB, but morbidity should be minimized.[1] External beam radiation therapy (EBRT) is used for local control.[1] For BRAF V600E mutated ATC, targeted therapy with dabrafenib plus trametinib shows promising results with overall response rate of 56%.[5] For stage IVC, the prognosis is poor. Targeted therapy and chemotherapy are still options, but treatment mainly focuses on symptom palliation.

Conclusion

ATC is an aggressive tumor with a poor prognosis, ***but treatment has evolved from palliative care to personalized, molecular-based therapies and surgery, improving survival rates despite long-term cure challenges***. Our review highlights that low socioeconomic status is linked to poorer outcomes and underscores the difficulty of early detection in low-income populations.

References:

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2. Janz TA et al. Is the incidence of anaplastic thyroid cancer increasing: A population based epidemiology study. World journal of otorhinolaryngology - head and neck surgery 2019;5(1):34-40.
3. Nachalon Y et al. Aggressive Palliation and Survival in Anaplastic Thyroid Carcinoma. JAMA Otolaryngology–Head & Neck Surgery 2015;141(12):1128-1132.
4. Xu B et al. Dissecting Anaplastic Thyroid Carcinoma: A Comprehensive Clinical, Histologic, Immunophenotypic, and Molecular Study of 360 Cases. Thyroid 2020;30(10):1505-1517.
5. Subbiah et al. Dabrafenib plus trametinib in patients with BRAF V600E-mutant anaplastic thyroid cancer: updated analysis from the phase II ROAR basket study. Ann Oncol 2022;33(4):406-415.