CASE REPORT

Thyroid malignancy mimicking as acute thyroiditis: A Pandora's box on cytology

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Abstract

We report a case of Anaplastic Thyroid Carcinoma (ATC) mimicking acute thyroiditis in a 78 years old female who came with complaints of swelling in front of neck with hoarseness of voice. Patients with ATC typically present with a rapidly enlarging neck mass with compressive symptoms. ATC has got poor prognosis. Ultrasound neck and fine needle aspiration cytology are the first diagnostic methods in assessment of thyroid lesions.

Keywords: Post Radiation Therapy, Acute Suppurative Thyroiditis, Anaplastic Thyroid Carcinoma-Thyroid, Squamous Cell Carcinoma

Introduction

Anaplastic Thyroid Carcinoma (ATC) is the most aggressive tumor of the thyroid arising from thyroid follicular epithelium. In contrast to differentiated thyroid carcinomas, ATC is a very rare tumor which is nonencapsulated, highly malignant with rapid local extension and distant metastasis [1].

Ultrasonography of the thyroid with Fine Needle Aspiration Cytology (FNAC) may help in the early diagnosis [2-3]. ATC, sometimes due to tumor ischemia and secondary infection, may masquerade as thyroid abscess or acute thyroiditis and sheets of polymorphonuclear cells predominate the smears from the thyroid aspirate [2-3]. The present case is of an ATC mimicking as acute thyroiditis. Acute Suppurative Thyroiditis (AST) is thus an uncommon presentation in the older age group [2] and tumors can mimic as abscess. One of the rare presentations of ATC is the rapid growth of the tumor causing thyroiditis with symptoms of hyperthyroidism and more severe neck pain and tenderness.

We report a case of a 78-year-old female with anterior neck swelling presenting as acute thyroiditis.

Case Report

A 78-year-old female had a history of swelling in front of the neck in the past three months. The swelling was rapid in onset, was initially small in size gradually progressed to a large size not associated with pain. It was associated with difficulty in swallowing and hoarseness of voice. On examination, the swelling was present in front of the neck, measuring 5 × 4 cm, extending 1 cm from the anterior border of the sternocleidomastoid (Figure 1). The temperature over the swelling and overlying skin was regular. Swelling moved with deglutition. She was clinically diagnosed with thyroid malignancy. All the laboratory parameters were within normal limits. Both direct and indirect laryngoscopy was done and it was found to be normal.

A Contrast Computed Tomography (CCT) scan of the neck showed features highly suggestive of

malignancy of thyroid. Later USG guided FNAC was performed, and 3 ml of pus was aspirated from both the lobes of the thyroid. On microscopy, it showed predominantly inflammatory cells in the form of neutrophils, few histocytes, and ill-formed granulomas (Figure 2). Occasionally, pleomorphic round to-polyhedral cells were seen with increased cytoplasmic ratio, a hyperchromatic and bizarre nucleus with moderate to abundant cytoplasm, and a well-defined cell margin (Figure 3).

Occasional thyroid follicular cells were noted in the smears. The background was necrotic. The smear studied from the left cervical lymph node aspirate showed pleomorphic cells having the same above mentioned features. These features were suggestive of acute suppurative thyroiditis along with malignant cells with possibility of squamous cell carcinoma or anaplastic carcinoma. The material was processed for the cell block and it showed sheets of pleomorphic epithelial cells with pleomorphic vesicular nuclei and prominent nucleoli with adjacent areas of necrosis and hemorrhage were noted which were suggestive of ATC (Figures 4 and 5). Later patient was treated with chemoradiotherapy and treatment course remained uneventful after 6 months follow-up.

Figure 1: Clinical examination showed swelling 5×4 cm

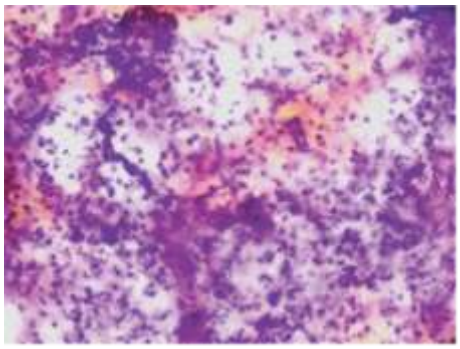

Figure 2: Cytology smears (H&E 100×) showing predominantly inflammatory cells

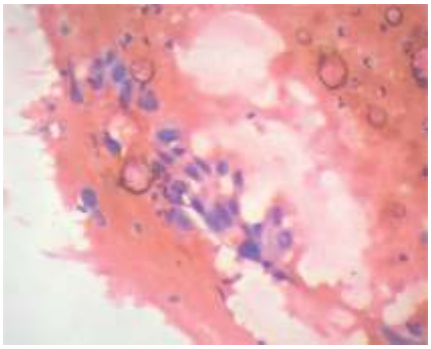

Figure 3: Cytology smears (H&E 400×) showing pleomorphic cells with hyperchromatic bizarre nucleus and moderate cytoplasm, and a well-defined cell margin (black arrow)

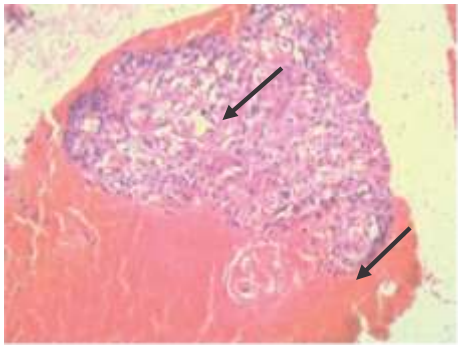

Figure 4: Cell block preparation (H&E 100×) showing sheets of pleomorphic epithelial cells with necrosis and hemorrahge

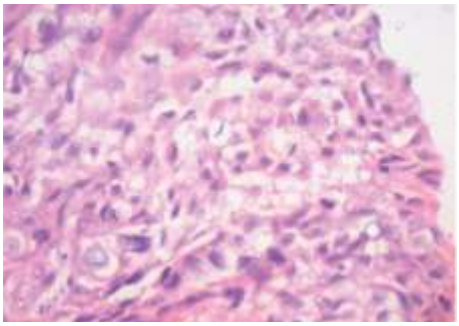

Figure 5: Cell block preparation (H&E 400×) showing sheets of pleomorphic epithelial cells with pleomorphic vesicular nuclei and prominent nucleoli

Discussion

ATC or undifferentiated carcinoma is one of the most aggressive and rare malignancies with survival rate of less than 6 months from initial presentation [1]. ATC typically progresses rapidly with high mortality risk. ATC constitutes less than 2% of all thyroid carcinomas and it is thought to arise from a terminal dedifferentiation of preexisting carcinomas of the thyroid follicular cell [4]. Most patients with ATC typically present in the sixth or seventh decade of life. There is a slight female to male preponderance in the range of 1.5-2 [4]. Our case was a female patient with 78 years. The hallmark of clinical presentation is a history of rapidly enlarging low anterior neck mass which was hard on palpation and fixed to underlying structures, often with symptoms of neck pain hoarseness, respiratory obstruction, and dysphagia. More than a third of patients present with sudden enlargement of a long-standing goiter. ATC is known for rapid local regional and metastatic spread. In the present case also, patient presented with signs and symptoms of short duration. More than 80% have cervical lymph node metastasis at presentation and 20–50% have systemic metastasis [5-6]. In the present case also, there was metastasis to the lymphnode.

The presentation of ATC in the form of thyroid abscess and thyroiditis is very unusual. There are only few cases reported in literature. Even after multiple drainage attempts, quick re-accumulation and persistence of the cyst should raise suspicion of carcinoma. Thyroid abscess is a rare entity. The thyroid gland is remarkably resistant to infectious agents due to its total encapsulation, secluded anatomic position, iodine-rich environment, extensive lymphatic drainage, and abundant bilateral blood supply with anastomotic superior and inferior thyroid arteries that protect against bacterial infection or growth. Differential diagnoses of AST are sub-acute thyroiditis, hemorrhagic cyst, thyroid lymphoma, anaplastic carcinoma, etc. [7]. Ultrasonography and FNAC are the only methods to confirm the diagnosis [2-3]. Other pre-existing thyroid diseases like nodular goiter, infections from the upper respiratory tract, pharynx, middle ear, or some distal organs may result in AST [1, 8]. In the present case the ATC presented as an acute thyroiditis. Hence it should be always kept as differential diagnosis for thyroid swelling in the older age group. The hypothesis of this case presenting as acute thyroiditis could be 'de-novo' with subsequent cyst formation due to tumour ischemia from rapid tumour growth causing tissue necrosis and liquefaction with subsequent secondary infection [4].

On FNAC, the diagnosis of ATC can often be established in most cases but when it is masqueraded by thyroiditis, diagnosis becomes difficult. In such cases biopsy is occasionally necessary to exclude a lymphoma. The three predominant histologic patterns seen in ATC include spindle cell in 53%, giant cell in 50%, and squamous cells in 19% with sometimes overlapping features. In the present case the FNAC left out material was processed for cell block. On cell

block pleomorphic epithelial cells with pleomorphic vesicular nuclei with occasional squamous cell and necrosis were noted [4].

The treatment outcome of ATC is extremely difficult and unsatisfactory. Sometimes multidisciplinary approach is needed. Current therapies for ATC consist of a trimodal approach including surgery, external irradiation and chemotherapy based on the extension of the tumor. The first step is thyroidectomy in resectable cases. Unfortunately, most patients with ATC have unresectable tumor at the time of diagnosis. Debulking may be performed for palliation. Extensive radical surgery including esophagus or trachea resection is not warranted in patients with extensive invasion of adjacent structures since it has negative effect on the quality of life and no survival benefit. It is also not advisable to perform tracheostomy except in patients with dyspnea, unresponsive to corticosteroids and significant airway compromise undergoing chemo radiotherapy [9-10]. In the present case, patient was treated with chemo radiotherapy.

Conclusion

This is an extremely rare case of ATC mimicking as acute thyroiditis due to inflammatory cells disguising the pleomorphic tumor cells. FNAC is a functional initial investigation modality when there are atypical clinical and radiological findings. Whenever acute thyroiditis features are seen in FNAC in old age, ATC should be considered as a differential diagnosis and careful examination of the thyroid is necessary.

References

1. Leeper RD. Thyroid cancer. *Med Clin North Am* 1985; 69:1079-96.
2. She X, Zhou Y-N, Guo J, Yi C. Clinical analysis of acute suppurative thyroiditis in 18 Children. *Infect Drug Resist* 2022; 15:4471-4477.
3. Samanta S. Unusual cytomorphology of acute suppurative thyroiditis. *J Cytol* 2015; 32(1): 25-27.
4. Suryawanshi R, Deo S, Suryawanshi M. Ocular Geotrichosis. *J Krishna Inst Med Sci Univ* 2015;4(1): 185-187.
5. Veladanda R, Sindhu SC, Pallapolu L, Singh C, Desaraju V. A hospital based clinical study on corneal blindness in a tertiary eye care centre in north Telangana. *J Krishna Inst Med Sci Univ* 2016;5(2): 12-17.
6. O'Neill JP, Shaha AR. Anaplastic thyroid cancer. *Oral Oncol* 2013; 49(7): 702-706.
7. Hakeem AH, Chandramathyamma SK, Hakeem IH, Wani FJ, Gomez R. Riedel's thyroiditis mimicking as anaplastic thyroid carcinoma: Unusual presentation. *Indian J Surg Oncol* 2016; 7(3):359-362.
8. Otani H, Notsu M, Koike S, Morita M, Yamamoto M, Yamauchi M, *et al*. Acute suppurative thyroiditis caused by thyroid papillary carcinoma in the right thyroid lobe of a healthy woman. *Thyroid Res* 2018; 11:4.
9. Wilson PC, Millar BM, Brierley JD. The management of advanced thyroid cancer. *Clin Oncol (R Coll Radiol)* 2004; 16(8):561-568.
10. Shaha AR, Ferlito A, Owen RP, Silver CE, Rodrigo JP, Haigentz M Jr, *et al*. Airway issues in anaplastic thyroid carcinoma. *Eur Arch Otorhinolaryngol* 2013; 270(10): 2579-2583.

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