



## Case report

## Advanced hypopharyngeal squamous cell carcinoma mimicking thyroid abscess in a young male: Case report and literature review

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## ABSTRACT

**Introduction and importance:** Thyroid gland involvement by hypopharyngeal carcinoma is due to their close proximity. Initial presentation of such cancer as a thyroid abscess is rare in clinical practice thus risk of potential misdiagnosis. To the best of our knowledge, this is the first reported case in Tanzania.

**Case presentation:** We present a 17-year old male who presented with difficulty in swallowing, hot potato voice, difficulty in breathing and a wound at the anterior aspect of the neck. He was managed at peripheral health facilities as having thyroid abscess so had serial incision and drainage and prescribed antibiotics. He was referred to us where he undergone tracheostomy, direct laryngoscopy coupled with taking biopsy.

**Clinical discussion:** Computerized tomography (CT scan) of the head and neck showed an ill-defined heterogeneously enhancing mass with calcifications seen at the hypopharynx extending to the larynx and thyroid gland causing destruction of cricoid cartilage. It measured approximately  $7.6 \times 6.5 \times 4.4$  cm. The submandibular and sublingual glands are slightly infiltrated. Multiple enlarged lymph nodes are seen at anterior upper jugular Ila and posterior upper jugular I Ib with the largest having central necrosis and measures approximately  $2.9 \times 1.7$  cm. Histopathology showed an ulcerated epithelium with an infiltrative tumor containing dense chromatin. Such features were consistent with invasive squamous cell carcinoma, Grade II. (TNM staging being T4bN2cM0). The patient undergone tracheostomy to relieve upper airway obstruction and sent to oncology center for chemoradiation.

**Conclusion:** Clinicians should have a high index of suspicion of a possible underlying hypopharyngeal cancer whenever encountering patients with thyroid abscess.

## 1. Introduction

Squamous cell carcinoma (SCC) refers to an epithelial malignancy involving many anatomical sites of the upper aerodigestive tract and is the most common cancer capable of metastatic spread [1]. It is uncommonly reported in the hypopharynx similar to its rarity in young adults including paediatric population [1–3].

Despite histological similarity with other head and neck cancers, malignant neoplasms arising from the hypopharynx tends to exhibit a significantly different inherent behavior such as worse prognosis [1,4].

The characteristic worse prognosis of SCC arising from the hypopharynx may be attributed by several factors such as high propensity for lymphatic and systemic spread, advanced stage at presentation, predisposition to develop second malignancies, frequent nutritional

depletion, associated comorbid conditions and the frequent association with history of alcoholism [1,5].

Smoking and alcohol consumption are the major risk factors in the development of hypopharyngeal cancer [1,2,6].

Patients with hypopharyngeal cancer frequently present in advanced stage because the initial symptoms tend to mimic other benign conditions such as laryngopharyngeal reflux or globus pharyngeus and thus the prognosis is poor with a 5-year survival rate of 30–35% [2,6]. Hypopharyngeal carcinoma can involve the thyroid gland due to their close proximity and the incidence of thyroid gland involvement by hypopharyngeal carcinoma has been reported to range from 13% to 57% [2,7–9]. Patients with anterior neck abscesses should be handled with caution since biopsy of the abscess wall at the time of incision and drainage if suspicious may lead to an earlier diagnosis of occult

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carcinoma thus aiding in instituting prompt management [10]. Deep neck infection as the initial presentation of primary head and neck cancer is rare in clinical practice and these patients are potentially misdiagnosed due to such rarity [11], thus making them to present at specialized health facilities when in advance stages of the disease. Such diagnostic delays have implications in mortality of such patients.

We are therefore reporting a case of a locally advanced hypopharyngeal carcinoma with an unusual first presentation as a thyroid abscess. The work has been reported in line with the SCARE 2020 criteria [12].

## 2. Case presentation

A 17-year old male presented to our clinic with difficulty in swallowing, hot potato voice and difficulty in breathing characterized by inspiratory stridor, and a wound at the anterior aspect of the neck. Examination revealed an ulcerated anterior neck mass measuring  $5 \times 3$  cm, which was erythematous, hard on palpation and fixed to underlying structure (Fig. 1).

The patient was managed at peripheral health facilities as having thyroid abscess so had serial incision and drainage and prescribed several antibiotics without relief. He was then referred to us where he undergone tracheostomy, direct laryngoscopy coupled with taking biopsy which was sent for histopathological analysis. Endoscopic appearance of the tumor can be seen in Fig. 2.

His medical history was not remarkable for chronic cough or low-grade fevers. He reported no history of cigarette smoking or alcohol consumption or orogenital sexual practices.

Results of laboratory tests, HIV serology (negative) and sputum for acid-fast bacilli (negative) were normal except erythrocyte sedimentation rate (35/h) that was elevated and hemoglobin was 10 g/dl.

Upon evaluation, computerized tomography (CT scan) of the head and neck showed an ill defined, heterogeneously enhancing mass with calcifications seen at the hypopharynx extending to the larynx, hypopharynx and thyroid gland causing destruction of cricoid cartilage. It measured approximately  $7.6 \times 6.5 \times 4.4$  cm. It indents and causes partial obstruction of the airway. The submandibular and sublingual glands are slightly infiltrated. Multiple enlarged lymph nodes are seen at anterior upper jugular IIa and posterior upper jugular IIb with the largest having central necrosis and measures approximately  $2.9 \times 1.7$  cm. Histopathology showed an ulcerated epithelium with an infiltrative tumor in trabecular pattern bisecting muscle cells. Large polygonal cells formed the tumor and also had large nuclei containing dense chromatin. Such features were consistent with invasive squamous cell carcinoma, Grade II. (TNM staging being T4bN2cM0) (Figs. 3–7).

The patient also undergone tracheostomy to relieve upper airway obstruction and postoperatively, he received intravenous ceftriaxone 1 g



Fig. 1. Patient post tracheostomy and with an ulcerated right thyroid lobe.



Fig. 2. Endoscopic appearance of the obliterative tumor involving the pyriform fossa, post cricoid space and posterior pharyngeal wall.

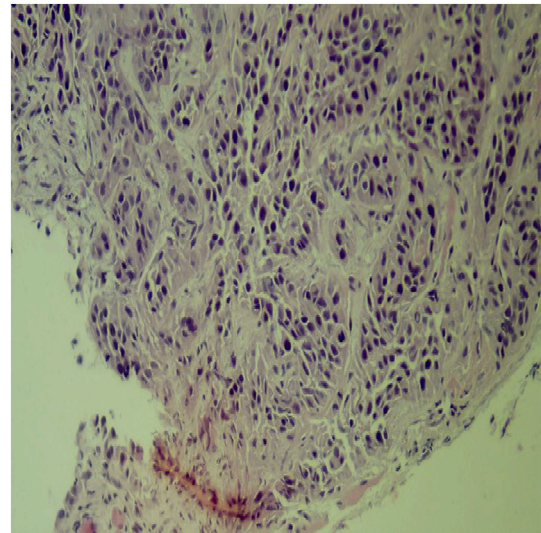


Fig. 3. Showing overlying squamous epithelium, below which tumor in sheets infiltrating stroma and vascular congestion (magnification  $\times 10$ ).

12 hourly for 72 h, intravenous paracetamol 1 g 8 hourly for 72 h, intravenous dexamethasone 8 mg 8 hourly for 72 h. He was then to Oncology unit for palliative chemoradiation.

## 3. Discussion

Depending on the affected subsite, hypopharyngeal carcinoma commonly presents with globus sensation, dysphagia, hot potato voice, neck mass, difficulty in breathing or persistent sore throat [5,13–15]. Patients with hypopharyngeal carcinomas may seek medical attention due to difficulty in breathing and may be due to carcinomas originating from the post cricoid region having the tendency of infiltrating the posterior cricoarytenoid muscles thus causing vocal cord paralysis and consequent upper airway obstruction [2,14]. Such behavior of airway compromise that may be attributed by immobility of vocal cords can be due to hypopharyngeal tumors from the medial wall of pyriform sinus involving vocal cords or arytenoids via the paraglottic space and at times when arising from the lateral wall of the pyriform sinus may infiltrate directly the thyroid cartilage [14].

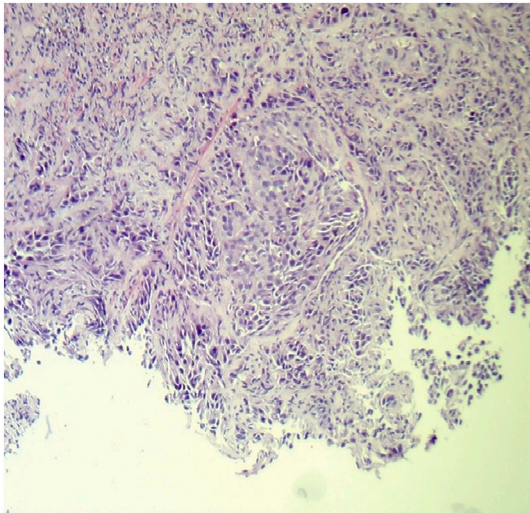


Fig. 4. Some nests of tumor with scanty stroma (magnification  $\times 10$ ).

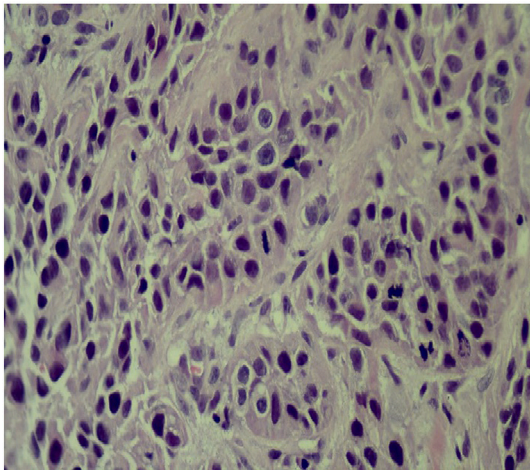


Fig. 5. Some nests of tumor with scanty stroma and inflammatory cells (magnification  $\times 20$ ).

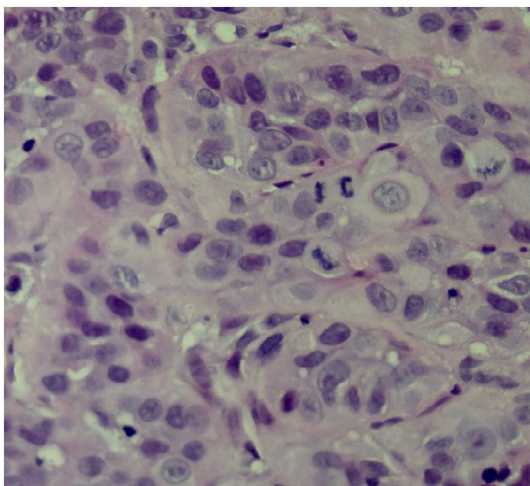


Fig. 6. Tumor cells exhibiting atypia, large nuclei with vesicular chromatin and prominent nucleoli, abnormal mitosis seen (magnification  $\times 40$ ).

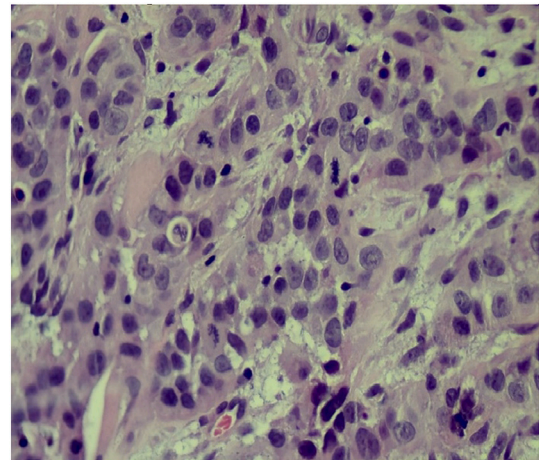


Fig. 7. Tumor cells exhibiting atypia, large nuclei with vesicular chromatin and prominent nucleoli, abnormal mitosis seen (magnification  $\times 40$ ).

Hypopharyngeal cancers may arise from various sub-sites such as pyriform sinus (80%), followed by post cricoid (13.5%) and posterior pharyngeal wall (6.5%) and when they tend to arise from the posterior pharyngeal wall they may cause dysphagia and upper airway obstruction [2,13].

In addition to tobacco and alcohol intake, other reported risk factors include Plummer-Vinson syndrome and gastroesophageal reflux. At the present time, there are conflicting conclusions regarding the role of Human papilloma virus (HPV) in causation of hypopharyngeal cancer since has not been found to play a significant role in the pathogenesis of hypopharyngeal squamous cell carcinoma [6,16].

The structural integrity of the thyroid gland favors it to be less prone to infectious causes due to its capsule and abundant blood supply coupled with rich lymphatic drainage and therefore less chance of acute suppurative thyroiditis. The resistant to infectious agents is also conferred by high iodine content within the thyroid gland [2,17,18]. Such resistance prevents progression from acute suppurative thyroiditis to thyroid abscess. Such rarity could also be explained by the rare presentation of advanced hypopharyngeal cancer mimicking thyroid abscess as depicted in our case report.

The patient we describe in our case report presented with right-sided thyroid abscess that masked the underlying advanced primary hypopharyngeal cancer therefore adults presenting with thyroid abscess should be investigated for any underlying causes such as anaplastic thyroid carcinoma, Quervain's thyroiditis or radiation induced thyroiditis [2,18]. In a case report from Slovakia, similar finding was found in a patient who was initially diagnosed to have recurrent thyroid abscess and subsequent endoscopy revealed an oedematous hypopharynx and reduced vocal cord mobility. The diagnosis of hypopharyngeal carcinoma was only established after further investigation spurred by persistence of abscess despite optimal therapy [18].

Available literatures have postulated anatomical location of tumors at the post cricoid space, subglottic extension, extra laryngeal spread and prior tracheotomy to be the possible risk factors for thyroid gland involvement by hypopharyngeal cancers [7,9,19]. This seems to correlate with what was seen reported in our case report since the tumor had involved the pyriform fossa, post cricoid space and posterior pharyngeal wall which are all the known anatomical sub sites of the hypopharynx.

Hypopharyngeal carcinoma has propensity for lymphatic spread due to its rich network of lymphatics where 60–80% of affected patients have lymph node involvement at presentation and 6% of patients presents with metastasis at presentation and at times increasing to 60% throughout follow up [6,20]. Such observation appears to correlate with what was found in the reported case since the patient had lymph nodes involvement when the patient was first seen at our health facility.

Compounding the diagnosis of hypopharyngeal carcinoma so as to establish the suitable treatment modality requires imaging where computerized tomography (CT) scan is useful in evaluating loco regional extension of the malignant tumor as well as nodal involvement and distant metastasis. Similarly, magnetic resonance imaging (MRI) has been of importance to delineate soft tissue extension of the tumor and also has a role in choosing the treatment modality [14,21,22]. The available treatment options for hypopharyngeal carcinoma include surgery, chemotherapy and radiotherapy. The desired treatment modality to be chosen depends on tumor staging and the patient's performance status [2,5,20]. In our patient, the extensive nature of the tumor and his poor physiological performance when seen at our health facility precluded the option of surgery and thus chemoradiation was chosen as the most appropriate treatment modality.

#### 4. Conclusion

Due to its rarity, the possible underlying cause of thyroid abscess should be sought whenever encountered in clinical practice since patients with neck infections as the initial presentation of primary head and neck cancer are potentially misdiagnosed. There should be a high index of suspicion among clinicians of a possible underlying hypopharyngeal cancer whenever encountering patients with thyroid abscess thus necessitating prompt further investigations and treatment if a malignant neoplastic condition is established.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Provenance and peer review

Not commissioned, externally-peer reviewed.

#### Ethical approval

Ethical standards were reviewed and approved by the Head of Department of Otorhinolaryngology at the Zonal Referral Hospital.

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#### Guarantor

Dr. Zephania Saitabau Abraham takes full responsibility of the work.

#### Research registration number

N/A.

#### CRediT authorship contribution statement

ZSA-Conceptualization, writing original draft of the manuscript

OMK-Conceptualization and reviewing the prepared original draft of the manuscript

AAK-Conceptualization and reviewing the prepared original draft of the manuscript.

#### Declaration of competing interest

The authors report no conflict of interest.

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