Oropharyngeal Metastasis from Papillary Thyroid Carcinoma: A Rare Event

Neyaz A, Husain N*, Shukla S, Arora A and Verma V

Department of Pathology, Dr. Ram Manohar Lohia Institute of Medical Sciences, India

Abstract

Metastatic oral malignancy accounts for 1% of all oral cancers. Primary tumor sites are lung, kidney, liver, breast, female genital organs and colon-rectum. Metastasis from thyroid carcinoma to the oropharynx is very rare. Papillary thyroid carcinoma (PTC) favors lymphatic spread. Hematogenous spread rarely occurs to the lung, bones and brain. We report a rare case of a 36 year old female in whom metastatic lesion from papillary thyroid cancer presented 13 years after treatment of the primary, as an oropharyngeal mass clinically mimicking a second malignancy. CT scan revealed a mass lesion arising from posterior wall of oropharynx, partially extending over posterior wall of hypopharynx at the metastatic site, with a large primary in the left lobe of thyroid involving larynx. Histology showed a papillary adenocarcinoma which expressed CK7, thyroid transcription factor 1 (TTF1) and thyroglobulin. The review details metastasis in the oro-pharynx, metastatic sites of thyroid malignancies, more specifically differentiated thyroid carcinomas and their prognostic significance. Issues in histopathology, diagnosis of the lesion including distinguishing it from a primary PTC in a thyroglossal cyst or a lingual thyroid, differential diagnosis of other papillary lesions, interesting collision tumours are discussed. Furthermore the mechanism of lymphatic spread to oropharynx and the radiological diagnosis of metastasis and treatment strategies have been outlined.

Keywords: Oropharynx; Metastasis; Papillary thyroid carcinoma

Introduction

Metastatic oral malignancy accounts for 1% of all oral cancers [1]. Primary sites of metastasis are lung, kidney, liver, breast, female genital organs and colon-rectum [2-3]. Metastasis from thyroid malignancies to this area is very rare. Papillary thyroid carcinoma favors lymphatic spread [4]. Hematogenous spread rarely occurs to the lung, bones and brain [5]. We report a rare case where metastasis from papillary thyroid carcinoma presented as an oropharyngeal mass, partially extending over wall of hypopharynx.

Case Presentation

A 36 year old woman presented to her general medical practitioner with a five week long history of difficulty in solid food uptake and hoarseness of voice. She was referred to the Surgical Oncology department of King George’s Medical University. On initial examination a pharyngeal exophytic mass lesion arising from posterior wall of oropharynx, partially extending over posterior wall of hypopharynx at the metastatic site, with a large primary in the left lobe of thyroid involving larynx was identified on larygoscopy and a provisional diagnosis of a primary oropharyngeal growth was made. CT scan revealed a large primary mass lesion from posterior wall of oropharynx and a provisional diagnosis of metastasis and treatment strategies have been outlined.

was not able to provide any details. An axial contrast enhanced CT scan revealed a mass lesion arising from posterior wall of oropharynx, partially extending over posterior wall of hypopharynx at the metastatic site (Figure 2a). CT slice at the level of thyroid cartilage showed involvement of left lateral and posterior aspect of larynx by thyroid mass (Figure 2b). A separate hypo-enhancing mass arising from the left lobe of thyroid was also identified. Final diagnosis of a metastatic papillary thyroid carcinoma was rendered. Patient was given palliative therapy addressing the issue of dysphagia and breathlessness and a tracheostomy was done.

**Discussion**

The oral cavity is an uncommon site for metastatic disease. Metastatic disease, when present, involves jaw bones primarily the mandible followed by maxilla [6] Soft tissue and mucosal metastasis is rare. Major primary sites in males are usually the lung, kidney, liver, and prostate while in women oral metastases may come from the breast, female genital organs, kidney, and colo-rectum [7]. A recent study by Thiele et al. [8] have reported incidence of distant metastasis from the lung, kidney, liver, breast, female genital organs, kidney, and colo-rectum [7]. A recent study by Thiele et al. [8] have reported incidence of distant metastasis at 2.39% of all malignancies in the oral and cranio-maxillofacial area, which is twice as high as previous published data.

The tissue involved in the oral cavity varies with the primary site and in men metastases from the lung go to the mandible and maxilla followed by oral mucosa (22% and 31.3%, respectively) whereas the prostate adenocarcinoma metastasizes to jawbones (11%) and kidney to the oral soft tissues (14%). In women, breast primaries affect jawbones and soft tissues (41% and 24.3%, respectively), followed by adrenal and female genital organs in the jawbones (7.7% and 14.8% respectively) [6]. The primary site considered initially in the current case was also lung in view of the papillary morphology and immunoactivity for TTF1. The classical nuclear morphology of papillary thyroid carcinoma in terms of clear nucleoplasm, intranuclear inclusions and grooves was not evident in our case at the metastatic site. However positive thyroglobulin in the second line of immunostaining confirmed the primary as a PTC.

PTC usually shows lymphatic invasion and frequently metastasizes to regional lymph nodes, although distant metastases are considerably less frequent [4]. Thyroid carcinoma metastasis to the jaws is rare with only a limited number of cases previously reported in the literature. Nikitakis in 2011 reported a case of mandibular metastasis from PTC and summarized a review of 36 previously reported cases of metastases from malignant thyroid neoplasms including 33 to the jaw bones and three to the mucosa which included one to the dental tongue and lower lip, right maxillary gingiva and anterior mandibular gingival [9-10]. PTC accounted for 8 (22.2%) cases. Single cases of metastasis from Hurthle cell, medullary, and poorly differentiated carcinoma have been reported. In their review, the vast majority of oral metastases from thyroid cancer were located in the mandible (32/37; 86.5%). Further in a fair number of cases of metastatic thyroid cancer to the oral cavity reviewed, there was also involvement of adjacent structures such as the parotid, infratemporal fossa, and masticator space and sinus. In our case also an extensive spread of the primary thyroid mass to left lateral and posterior aspect of larynx was evident in CT scan.

Recently Siddique et al. [11] reported a PTC with sarcomatoid transformation metastasizing to the gingival mucosa. Nawale et al. [12] reported 12 cases of metastatic neoplasms to the jaw bones and observed 4/12 to be cases as PTC. However, none of their cases had mucosal involvement. Summarizing, oral soft tissue metastasis from PTC appear to have been reported in 6 cases only and these were located mostly in the gingiva.

Parapharyngeal region metastasis from PTC thyroid is also rare. Parapharyngeal lesions are often nonspecific or asymptomatic when the tumor does not exceed 3.0cm in size. Cases with larger lesions frequently complain of a mass in the neck or oropharynx that causes dysphagia [13], as was present in our case. Most parapharyngeal metastases are unilateral; whereas some rare cases are bilateral. Integrated 131I-SPECT/CT is a useful tool for the screening patients with differentiated thyroid carcinoma, especially early lesions [14]. Parapharyngeal metastasis usually present as cystic lesions in the parapharyngeal region and retropharyngeal space, sometimes cystic metastasis in lymphnodes or masquerading as a deep lobe parotid mass. A transoral approach has been used to approach these lesions both for FNAC and surgical resection but they may rarely involve the as oro-pharyngeal mucosa. Our case presented with an exophytic mass in the oropharynx which was visualized on laryngoscopy.

![Figure 1: Histological and Immunohistochemical features of index case. A) Tumor cells are arranged in a papillary architecture. B-D) Strong expression of TTF-1, CK-7 and Thyroglobin.](image1)

![Figure 2: A) Axial contrast enhanced CT scan reveals a mass lesion (arrow) arising from posterior wall of oropharynx. B) Inferiorly, mass is partially extending over posterior wall of hypopharynx. C) Section at the level of thyroid cartilage shows involvement of left lateral and posterior aspect of larynx by thyroid mass. D) Hypo-enhancing mass arising from the left lobe of thyroid.](image2)
Recognizing rare metastases from DTC has a significant impact on the muscle, parapharyngeal, parotid, adrenal, ovaries and skin are rare. are the lung and bone. Metastases to the brain, breast, liver, kidney, regional lymph nodes [16]. The major sites of distant metastases follicular and Hurthle cell histology, large tumor size, and positive gender, older age, single status, black and other non white races, positive metastasis is often a grave event and accounts for most of its disease-specific mortality. Metastasis in DTC occur in only 2.2% cases and metastatic lesions. Care should be taken to determine whether 131I uptake found at an unexpected site is DTC metastasis or false-positive uptake [17]. Prognostic factors in DTC include tumor size, multifocal or bilateral occurrence, angiogenesis, and extra capsular growth, presence of cervical lymph node metastases, distant metastases and early local relapse.

Primary thyroid malignancies may also arise in the oropharynx from thyroglossal duct remnants and in thyroglossal cyst. Occurrence of primary carcinoma is reported to be present in 1% cases in thyroglossal cyst of which 94% are histologically papillary thyroid carcinoma [18]. Hoffman et al. [19] observed PTC in a thyroglossal cyst along with a small thyroid carcinoma and three positive lymph nodes. These authors argue the case of whether the cystic carcinoma is primary or a metastasis from thyroid carcinoma in their case report. It is interesting to note that the location of oral foramen caecum of the thyroglossal duct is anatomically in a proximal relation to the vallecula. A possibility of a primary from thyroglossal duct remnants in the oral cavity was considered in our case initially, however the presence of a large mass in the left lobe of the thyroid along with extensive involvement of adjacent tissues and lymphnodes in CT scan supported a primary in thyroid with metastatic lesion in the oropharynx. In rarer instances primary thyroid malignancy may arise in an ectopic lingual thyroid.

Clinical suspicion of a second primary tumour possibly Oral Squamous Cell Carcinoma (OSCC) with a past history of a thyroid carcinoma was considered in our case and the biopsy was sent as an oropharyngeal carcinoma. Multiple synchronous head and neck cancers are known to occur [20]. Collision metastases have also been reported in the cervical lymphnodes from PTC and OSCC simultaneously [21]. Collision tumors pose a diagnostic challenge to pathologists in identifying the lesion as metastatic and locating the primary cancer. Such a presentation can pose a diagnostic challenge to pathologists in identifying the lesion as metastatic and locating the primary cancer.

References


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