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Metastatic Follicular Carcinoma Of Thyroid: A Rare Case Report

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Abstract

Metastatic tumors to jaw bones are rarest among all malignant oral neoplasms. Metastatic thyroid carcinomas account for around 6% of oral cancers. Among the differentiated thyroid carcinomas, Follicular thyroid carcinoma (FTC) is the second most common type and is known to disseminate hematogenously to bone and lungs. Metastasis to the facial skeleton is exceedingly rare and presents a treatment challenge. A 60 year old female patient reported with a chief complaint of pain and swelling on left side of the face present since two months. On clinical examination, a solitary extra oral swelling was present at left angle of mandible. Bilateral radiolucencies were observed in the ramus of the mandible. Based on the clinical and radiographic features a differential diagnosis of odontogenic keratocyst or secondary malignancy of mandible were considered. Histopathological features were suggestive of Metastatic follicular thyroid carcinoma, confirmed by cytoplasmic immunohistochemical expression of thyroglobulin.

Keywords: Carcinoma, Metastasis, Thyroid

Introduction

Metastatic tumors to jaw bones comprise 1% of all malignant oral neoplasms. In men the most common origin of jaw metastases are lungs, liver, and prostate whereas in women it is breasts, thyroid gland and lungs.[1,2] A total of 6% cancers of oral cavity occur from metastases of thyroid gland.[3] Metastasis to axial skeleton is more compared to jaw bones which is rare.[4]

Case Report

A 60 year old female patient reported to the outpatient department with a chief complaint of pain and swelling on left side of face since 2 months. The patient was partially edentulous and undergone extraction of 36, four months ago due to pain in the tooth. On extraoral examination a solitary, well defined, oval swelling measuring 8x7cm extending superio-inferiorly from ala-tragus line to lower border of mandible and anterio-posteriorly 1.5 inches distal to angle of mouth till anterior border of lobule of left ear.[Figure 1] On palpation the swelling was non-tender, non-compressible and bony hard. On intraoral examination, mild buccal vestibular obliteration in relation to 37 and 38. [Figure 1]

On radiographic examination, there was a multilocular radiolucency in left ramus and unilocular radiolucency in right ramus. [Figure 2] After considering the clinical and radiographic examination, a provisional diagnosis of OKC (Gorlin-goltz syndrome) and differential diagnoses of metastatic carcinoma of mandible and ameloblastoma were given.

Incisional biopsy irt 38 was performed. The H&E stained sections showed round to ovoid follicles peripherally lined by cuboidal cells containing round to ovoid nucleus. [Figure 3] Based on these histopathological features it was diagnosed as follicular carcinoma of thyroid. Immunohistochemical staining of the tumor cells for

thyroglobulin showed cytoplasmic positivity. [Figure 3]

Table 1: IHC expression in various neoplasms [12,13]"

1	**Follicular adenoma of thyroid**	• **IHC markers - + ve for thyroglobulin**
2	**Follicular variant of ameloblastoma**	• **IHC markers - +ve for S-100, vimentin** **- ve for thyroglobulin**
3	**Tubular variant of adenoid cystic carcinoma**	• **IHC markers - +ve for S-100, vimentin** **- ve for thyroglobulin**
4	**Tubular variant of breast carcinoma**	• **IHC markers – +ve for ER (Estrogen receptor) and PR(Progesterone receptor)**
5	**Follicular variant of papillary carcinoma of thyroid**	• **IHC markers - + ve for thyroglobulin, TTF-1, CK7** **- ve for CK20**
6	**Medullary carcinoma of thyroid**	• **IHC markers - +ve for S-100, vimentin** **- ve for thyroglobulin**

"Figure 1: Clinical pictures showing extraoral swelling and intraoral obliteration"

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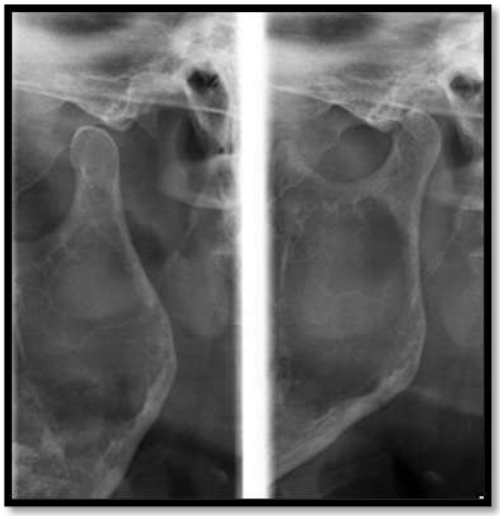
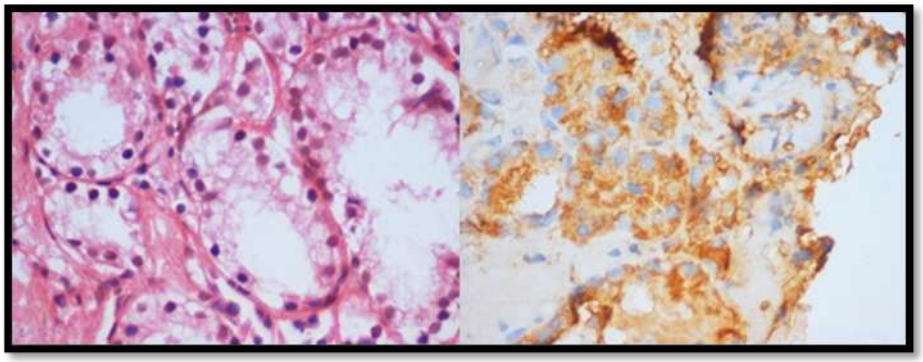
"Figure 2: Lateral view of ramus of mandible showing radiolucent lesions"



"Figure 3: Follicles lined by cuboidal cells (H&E staining – 40x magnification) and Cytoplasmic positivity for thyroglobulin IHC marker (IHC staining – 40x magnification)"



Disscussion

Among oral malignant neoplasms, metastatic tumors constitute 1%. [2] Metastasis to jaw is rare compared to that of axial skeleton and skull due to decrease in vasculature and red bone marrow with age. McCormack reported 5.8% of skull metastasis from thyroid(1966). Among all well differentiated thyroid cancers, the distant metastasis may be about 7-23%. [5] Thyroid cancers constitute up to 6% of oral metastasic tumours. According to Suzuki *et al*, mean age of patients was 60.4 years which was concordant to the age of this case. Metastasis from thyroid carcinomas is more common in females. [6]

The most common site of involvement for metastasis from FTC is axial skeleton. The high blood inflow to the red bone marrow makes them readily accessible for cancer cells. Another supportive concept for the metastasis from thyroid to axial skeleton is Batson's vertebral - venous plexus. [5] Carcinoma of thyroid has 4 histopathological variants - papillary, follicular, medullary and anaplastic. [7] Among the well differentiated thyroid cancers (DTC), Papillary carcinoma is the most frequent differentiated thyroid neoplasm [1], the second most common is follicular. The rate of bone metastasis is threefold higher for follicular thyroid cancer (FTC, 7–28%) compared with papillary thyroid cancer (PTC, 1–7%). [8] A likely explanation is that FTC readily spreads via blood stream to distant organs. [9] FTC usually may present as a long standing neck lump, [1] this feature in absent in our case indicating an occult presentation of disseminated malignancy.

Post extraction site may also serve as promoting factor for metastasis. [10] The finding in our case was accordant with the literature. Tumours stimulate osteolysis by producing factors like parathyroid hormone-related protein (PTHrP), interleukins (IL-

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11, IL-8, IL-6) and receptor activator of nuclear factor kappa -. β ligand (RANKL). The "seed and soil" theory hypothesizes that the metastases develops only in presence of favourable microenvironment. Bone is a rich source of matrix embedded growth factors such as IGF, TGF- β and PGDF. These cytokines are released during the process of osteolysis and act upon the invading tumour cells to promote induction of osteoclast-promoting factors and thus favour and promote bone homing, colonization and subsequent tumour growth. Differential expression of tumour suppressor genes Caveolin-1 and Caveolin-2 has been hypothesized to explain the higher propensity of FTC to metastasize to bones when compared to PTC. [4]

According to the report by kaveri *et al* radiographic appearance could range from lytic to radiopaque lesion with ill-defined borders. [11] In contrast to this our case showed a multilocular radiolucency with well-defined borders at the site of metastasis. The most probable reason for this finding could be the well differentiated nature, longer duration and less aggressive presentation of the metastatic lesion.

Criteria for the diagnosis of metastatic tumors include: First, the primary tumor must be histopathologically verified. Second, the metastatic tumor & primary tumor must be of same histologic type. The possibility of direct local spread must be excluded.

The histopathological differential diagnoses include Follicular adenoma of thyroid which is a benign tumor with thinner capsule and lesser nuclear atypia and mitotic figures. In follicular ameloblastoma, peripheral tall columnar cells with central stellate reticulum like cells are seen. In tubular variant of adenoid cystic carcinoma, simple or complex tubules showing an inner layer of cells with eosinophilic cytoplasm and an outer layer of basaloid cells are dispersed in fibrous stroma. Tubular variant of breast carcinoma shows tubules lined by single layered cells with small nuclei with IHC positivity for ER & PR. In Follicular papillary carcinoma of thyroid, absence of papillary growth and rare occurance of psammoma bodies are seen. Characteristic features include nuclear pseudo inclusions, optically clear, ground glass nuclei and abundant nuclear groove. In large tumors of thyroid medullary carcinoma, foci of necrosis, mitotic activity, binucleate cells, psammoma bodies, stromal amyloid deposits and hemorrhage are seen. They Originate from c cells and shows calcitonin positivity. [12,13] IHC markers for different lesions are given in Table 1.

The optimal treatment options for differentiated thyroid cancers include thyroidectomy and radiotherapy. Pittas *et al* reported, an overall 10 years survival rate may be 13-21% in patients with distant metastasis from DTC. [14]

Conclusion

Metastatic jaw tumors are relatively rare and may become challenging in tracing the site of the origin. Discovery of an oral metastasis leads to detection of an occult primary malignancy elsewhere in the body. Histopathological features along with panel of IHC markers help the oral pathologists in diagnoses and identifying the origin of the metastatic lesion.

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Volume 6, Issue 2; March-April 2023; Page No 1048-1052
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Volume 6, Issue 2; March-April 2023; Page No 1048-1052
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