Metastasis of Thyroid Carcinoma to the Mandible

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ABSTRACT
Mandibular metastasis due to thyroid carcinoma is not very frequent and the cases described in the literature are few. Due to its bloodstream dissemination, most of them are a consequence of the follicular variant of thyroid carcinomas. We are presenting a rare case of thyroid carcinoma metastasizing to the mandible so as to highlight the consideration of metastatic neoplasms in the differential diagnosis of jaw lesions. The present case emphasizes the importance of considering metastasis in the differential diagnosis of a radiolucent lesion in the mandible in a patient with a history of any malignant disease. The clinical and histopathological features are discussed.

CASE REPORT
A 40 years old female came with complaints of swelling on the left side of cheek since 4 months associated with pain. Pain was dull aching from the onset of the swelling and used to increase on mastication. There was history of low-
Figure 1: USG Showing hypoechoic nodules in right lobe and another Exophytic nodule in left lobe.

Figure 2: Radiograph oblique view of mandible showing radiolucent lytic lesion in ramus and coronoid process of left side of mandible with adjacent soft tissue swelling.

Figure 3: CT-scan showing moderate heterogeneously enhancing soft tissue density mass lesion noted in ramus of mandible on left side.

Figure 4: Volume rendered technique (VRT) clearly depicted the destruction of ramus and coronoid process of mandible on left side.

Figure 5: Incidentally screening axial sections of chest, evidence of another soft tissue density lesion noted in left 4th rib with destruction.
grade fever which was intermittent in nature. The patient on general examination was moderately built and nourished. Clinical examination revealed a well-defined swelling, measuring about 8 × 8 cm in the region of mandible on the left side. The swelling extended superio-inferiorly from the zygomatic arch to 1 cm above the angle of the mandible and anterio-posteriorly from anterior border of masseter to the tragus of left ear. The skin over the swelling was pigmented as the patient applied herbal latex. On palpation, the swelling was tender and firm in consistency. Bicortical expansion of the mandible, near the angle, was also noted. No palpable submandibular lymphnodes were evident. The orthopantomogram (OPG) revealed a large radiolucency extending from distal to third molar up to the angle of the mandible involving ramus of the mandible too. On ultrasonography (USG), evidence of ill defined hypoechoic lesion noted closely abutting the deep lobe of left parotid with focal areas of raised vascularity on colour Doppler.

Screening of neck showed hypoechoic nodules in right lobe and another Exophytic nodule in left lobe with raised vascularity on colour Doppler and low resistance diastolic flow on spectral Doppler(fig 1).

Patient was correlated retrospectively with radiograph mandible oblique view to rule out bony involvement, radiograph mandible showed radiolucent lytic lesion in ramus and coronoid process of left side of mandible with adjacent soft tissue swelling (fig 2).

Patient was subjected to CT scan plain and contrast to
know the exact characterization and extent of the lesion. CT showed moderate heterogeneously enhancing soft tissue density mass lesion noted in ramus of mandible on left side (fig 3). Volume rendered technique (VRT) clearly depicted the destruction of ramus and coronoid process of mandible on left side. Incidentally screening axial sections of chest, evidence of another soft tissue density lesion noted in left 4th rib with destruction (fig. 5).

Based on the clinical and radiographic findings, a provisional diagnosis of a metastatic tumor was considered; probably ameloblastoma of the mandible with malignant transformation, with metastasis to left 4rd rib. A fine needle aspiration (FNAC) from the intraoral lesion was suggested and the same was performed. It revealed repetitive follicular pattern with inspissated colloid with in the follicles suggesting a follicular neoplasm (fig 6). A biopsy was further considered to confirm the diagnosis. Microscopically, the incisional biopsy from the left angle of the mandible revealed the presence of lobules of thyroid follicles with trabecular pattern, infiltrating into fibrocollagenousstroma. Well-developed duct-like structures were also evident. Tumor cells showed mild pleomorphism and hyperchromatism [fig 7]. USG-guided FNAC was performed from thyroid nodule which showed repetitive follicles filled with colloid strand in the eosinophilicstroma, suggesting follicular neoplasm. Presence of well-developed duct-like structures, eosinophilic secretory material-colloid within lobules of thyroid follicles in the incisional biopsy specimen, and the presence of two nodules, one in each lobe of the thyroid under USG, suggested it to be primary tumor in thyroid, probably a metastatic follicular thyroid carcinoma (FTC) to the mandible.

The patient was referred for further management to oncology unit where further investigations such as hormonal levels and other specific investigations for the evaluation of the primary were performed. Total thyroidectomy was performed on the patient with subsequent excision of the metastatic tumor of the mandible. Excisional biopsy specimen of the primary had confirmed FTC which microscopically showed thyroid follicles of colloid, lined by tumor cells, and the tumor cells showed pleomorphism and hyperchromatism (fig 8).

**DISCUSSION**

Follicular thyroid carcinoma (FTC) tends to be a malignancy of older persons, with the mean age of patients in most studies being more than 50 years. Although papillary thyroid carcinomas are generally more common than follicular cancers, the latter are more prone to spread hematogenously, especially to lung and bones, with a rate of 5%-20%. Conversely, follicular carcinomas exhibit a relatively small propensity for lymphatic spread. Thyroid carcinoma metastasizing to the jaw is extremely rare accounting about 3.85% of all jaw metastases & 0.1% of all malignancies.

Metastatic tumors are of great significance since some cases may represent the only symptom of an undiscovered underlying malignancy. Despite the fact that many common primary neoplasms frequently metastasize to bone, they rarely metastasize to the oral region. As jaws are not always included in radiographic skeletal surveys for metastasis, the true incidence of metastatic tumors in the bones of the jaw is not known. The following criteria should be fulfilled for a malignant neoplasm to be considered metastatic, namely the presence of histologically verified primary, its histological similarity to the secondary lesion, and exclusion of direct extension from the primary. The amount of red bone marrow and blood vessels in the jaw bones tends to decrease with age, so the involvement of the jaw in metastasis appears to be less common than that of other bones. This is due to the gradual replacement of red marrow with yellow or fatty marrow. Most (60-80%) metastasis involving jaw bones occurs in the mandible, mainly in the molar and premolar areas, when compared to other bones of the facial skeleton due to the greater presence of hematopoietic tissue in the mandible and also due to reduced flow of blood in the area, helping the tumor cells become deposited here.

Metastatic tumors are most common in the fifth to seventh decades of life. The most common origins of metastasis vary with gender: Breast, ovary, and thyroid in female patients, and lung, prostate, kidney, and liver in men. The lung is the most common origin of metastasis into oral soft tissues, whereas the breast is the most common origin of metastatic tumors in the jaw bones. In one-third of the patients, oral metastasis may be the first evidence of metastasis from its primary site. In the jaw, pain, swelling, loosening of tooth, and paresthesia are the most common clinical manifestations. Patient complaining of numb chin or mental nerve neuropathy should always raise the possibility of a metastatic disease in the mandible. A peculiar site for metastasis is the post extraction site. The most common radiographic presentation is a radiolucent lesion with ill-defined margins.

FTC is a well-differentiated tumor which originates in follicular cells and resembles the normal microscopic pattern of the thyroid. It is the second most common thyroid cancer after papillary carcinoma, accounting for 10-20% of all thyroid malignancies, and is most often seen in patients over 40 years of age. The tumor usually
presents as an asymptomatic solitary intrathyroid nodule. At times, these neoplasms tend to metastasize hematogenously, affecting lung and bone most commonly. While distant metastases at the time of diagnosis are reported in 11-20% of patients, less than 1% of these cases are seen in patients younger than 45 years of age. There have been a few case reports of FTC causing unusual bony metastases to skull, mandible, maxilla, spine, and orbit. Immunohistochemical marker for FTC is thyroglobulin, which is present in more than 95% of FTC cases. [13,14]

The present case, a female patient about 40 years of age, presented with a swelling involving the left posterior mandible. Radiography showed extensive lytic lesion involving the ramus, up to condyle. USG of thyroid showed the presence of two nodules, one in each lobe of thyroid. Incisional biopsy of the mandible as well as excisional biopsy of the primary and secondary favored and confirmed follicular thyroid carcinoma (primary) that had metastasized to the mandible (secondary).

The lack of large numbers of patients with mandibular metastasis prevents accurate determination of the prognosis of FTC. Some evidence indicates that resection of solitary bony metastasis, along with total thyroidectomy, may increase survival among those with FTC. An early detection of metastatic disease improves the overall survival rate and treatment results.

REFERENCES