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Case Series

Metastatic Tumours to Oral Cavity: Uninvited Guests with Innocuous Guise

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Abstract

Oral metastatic lesions from distant tumours are uncommon and mainly involve the bony structures whereas metastases to soft tissue are extremely rare. Sometimes the innocuous appearance of a malignant lesion may bear the guise of a benign lesion and the clinician may miss the ominous lesion. The diagnosis of metastatic lesions of glandular origin in the oral region is challenging, to the histopathologist due to the overlap of histologic features of lesions in various glandular tissues distant from the oral cavity. It should be borne in mind that a malignant lesion may arise as a de novo lesion or represent a metastasis. The pathologist must determine the primary tumour site if it is a metastatic lesion. In most of the cases primary tumour is already known to the patient but sometimes patient may be unaware of the primary lesion. This can be a life-threatening situation, were the patient might be at the end stage of the disease. Oral metastasis usually appears as a late complication and frequently associated with multiple organ metastases. Here we are presenting a case series of metastatic tumours to oral cavity.

Keywords: Tumours; Oral Cavity; Metastatic

Abbreviations

MT: Metastatic Tumours; UMN: Upper Motor Neuron; Tvpm: Trivandrum; IOPA: Intra Oral Periapical Radiograph; PAS: Periodic Acid Schiff; PET: Positron Emission Tomography; CT: Computed Tomography; IHC: Immunohistochemistry; TTF-1: Thyroid Transcription Factor; RCC: Regional Cancer Centre; OPG: Orthopantomogram; CK: Cytokeratin; CBCT: Cone Beam Computered Tomography; IL: Interleukin; PGDF: Platelet Growth Derived Factor; FTC: Follicular Thyroid Carcinoma.

Introduction

Metastatic tumours (MT) to the oral region are an uncommon entity, constituting only 1-3% of all malignant oral neoplasms [1]. Metastasis to the head and neck region mainly to bone, soft tissue or it can be both. The primary organ of metastasis is from breast, genital organs, bones and kidney in case of females and in male it is lung, kidney, prostate, thyroid and skin [2]. The previous literature states that in about 30% of cases of metastasis, the primary tumour is not diagnosed [3]. It mainly occurs in males and in older age group. In case of jaw bones mandible is involved more commonly than maxilla, with the molar area being the most frequently involved site [4]. Other sites involved are gingivae, buccal mucosa, soft palate and tongue. The common presenting symptoms are pain, swelling, dysphagia, disfigurement, loosening of teeth, intermitted bleeding and paresthesia [5], and may lead to poor quality of life.

Metastases to tooth bearing area may appear as dental or periodontal infection and in the early stages it may mimic reactive lesions or benign tumours such as pyogenic granuloma, epulis, peripheral giant cell granuloma, and odontogenic infection(1). Lesions metastasising to soft tissues of cheek, tongue, floor of the mouth etc. may manifest as swellings or ulcerative lesions. Radiographic findings in metastatic tumours to the jaw may range from the absence of any manifestation to a lytic or opaque lesion with ill-defined margins. Metastatic lesion to the jaw bones commonly appear as osteolytic lesions and can be mistaken for odontogenic tumours or vascular lesions [6].

Metastasis is a complex process and it mainly spread by lymphatic and haematogenous spread. The primary tumour cells detach from the advancing tumour front; it invades into the surrounding tissue. It intravasate into the vessel and if a favourable condition is obtained extravasate into the target organ and further growth and multiplication occur. These steps are supported by the tumour cells themselves or with the support of tumour microenvironment. So, for a successful area depends on the ability of cancer cells to sustain the suitable microenvironment in the metastatic cascade [7].

In this case series we are presenting 2 cases of metastatic tumours to the oral cavity reported to out-patient department of Government dental college, Tvpm. The lesions were clinically diagnosed as benign neoplasms. In this case series we emphasise the importance of clinical examination and history taking to rule out metastasis in the oral and maxillofacial regions and include metastatic tumours in the differential diagnosis of commonly occurring lesions.

Case Presentation

Case Report - 1

A 50-year-old male patient reported with a painless swelling of 2 months duration. Patient complained of rapid increase in size of swelling for 2 weeks. On extra oral examination there was no evidence of asymmetry and during intraoral examination a firm pedunculated mass of size 4 x 2 x 2 cm was seen on the gingival aspect of 24, 25, 26 region and had a palatal extension. The overlying mucosa was normal and there was no signs of ulceration or bleeding. Dental examination showed grade III mobility of 24.

Patient had a history of stroke 6 years back and now suffering from UMN facial palsy and hemiparesis of left side. He was a chronic smoker and an alcoholic and stopped the habits 6 years agoback and patient experienced weakness for the past 6 months. He had also experienced dyspnoea for the last one year.

On radiographic examination IOPA radiograph shows vertical bone loss in respect to 24, 25 regions.

Based on the clinical and radiographic findings clinical diagnosis was given as fibroma, a benign connective tissue neoplasm.

The mass was excised and sent for histopathological examination. During grossing the specimen was encapsulated and brown in colour and the cut section obtained was a solid mass which also appeared brown.

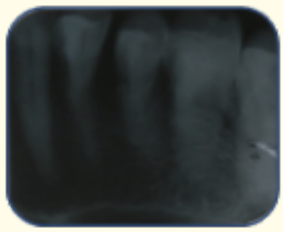

Figure 1: IOPA radiograph shows vertical bone loss.

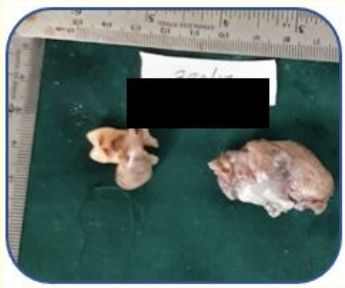

Figure 2: Grossing shows one hard tissue bit and a soft tissue bit.

On histopathological examination the lesion showed highly dysplastic malignant epithelial cells proliferating in ductal pattern in majority of the areas. Some of these ductal spaces were filled with eosinophilic coagulum. The stratified squamous epithelium of the oral mucosa was also dysplastic and seemed to merge with the tumour tissue. Inflammatory cell infiltrate was minimal.

H and E stained tissue of the specimen revealed.

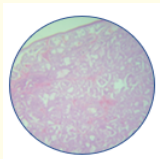

Figure 3: Shows scanner view of adenocarcinoma.

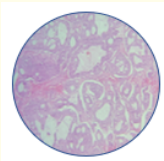

Figure 4: Shows low power.

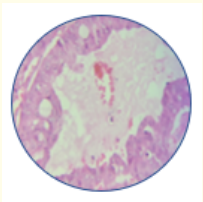

Figure 5: High power.

PAS special staining was done, and the central eosinophilic coagulum showed positivity indicating a glandular origin.

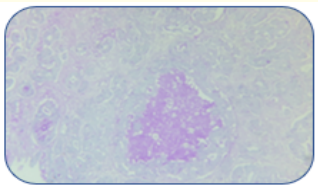

Figure 6: PAS staining reveals positivity.

Based on the above findings a differential diagnosis of adeno squamous cell carcinoma was given. To rule out metastasis from lung and intestine, the patient was referred to department of radio diagnosis. The PET and CT reports confirmed the diagnosis of primary pulmonary malignancy with metastatic lymphadenopathy on the right upper lobe. Numerous metastatic bony lesion involving vertebrae, ribs, pelvic bone was noticed which showed a lytic metastasis.

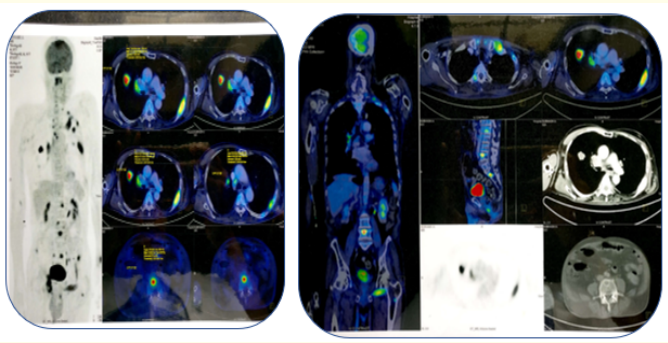

Figure 7: PET scan shows Numerous metastatic bony lesion involving vertebrae, ribs, pelvic bone was noticed which showed a lytic metastasis.

Thus, the diagnosis of metastatic tumour was confirmed. For confirmation we did an IHC for adenocarcinoma lung with the IHC markers Napsin and TTF-1. We obtained the result as positive.

Immunohistochemistry reveals positivity for napsin a cytologic marker and TTF-1 a nuclear marker.

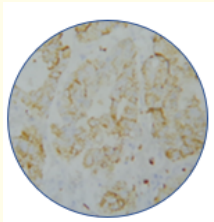

Figure 8: Shows positivity for Napsin

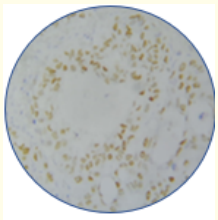

Figure 9: Shows positivity for TTF-1.

Patient was referred to RCC for further treatment. As the prognosis is poor, they decided to give a palliative treatment, like relieving pain and symptoms.

Case Report - 2

57-year female presented with the chief complaint of swelling over the right side of the lower face for 3 months. On examination an extra oral swelling was noticed on the right side of the lower jaw. Face was asymmetrical. On intraoral examination a firm non, tender swelling of size 4 x 4 cm noticed on the mandibular right body region extending from just anterior to the angle to 2 cm posterior to the corner of the lip with the normal overlying skin. The swelling was obliterating the right posterior buccal vestibule extending to retro molar and ramus region. There was mild tenderness on palpation.

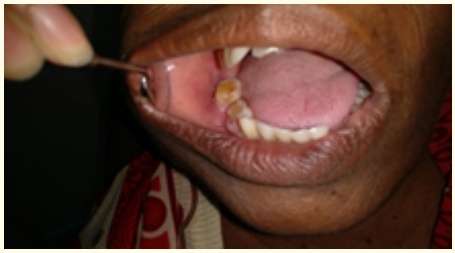

Figure 10: Intraoral swelling on the mandibular right body of the mandible.

On radiographic examination OPG showed a well-defined multilocular radiolucent lesion with ill-defined borders on the mesial aspect with thin linear straight internal septae. There was thinning of the lower cortical border in association with the lesion.

Based on the clinical and radiographic findings, clinical diagnosis of central giant cell granuloma and ameloblastoma was given.

Incisional biopsy was taken and sent for histopathological examination

H & E stained tissue showing cells arranged in follicles.

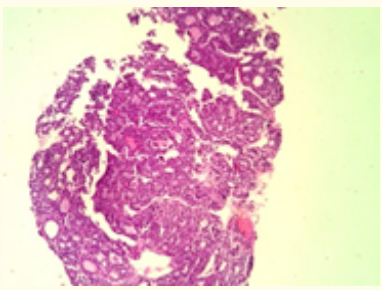

Figure 11: H & E stained tissue low power.

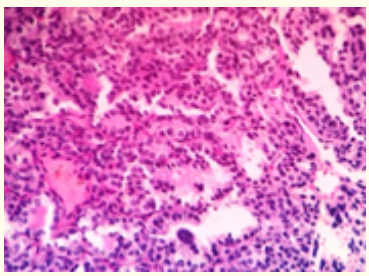

Figure 12: H & E stained tissue high power view.

Microscopy showed tumour cells proliferating in a follicular pattern filled with eosinophilic coagulum with peripheral scalloping. Follicles were lined by cuboidal cells. Based on microscopic finding differential diagnosis was given as salivary gland neoplasm or metastatic tumour from thyroid. For confirmatory diagnosis IHC was done using thyroglobulin and CK7 antibody which were intensely positive.

Immunohistochemistry study done, and results were obtained positive.

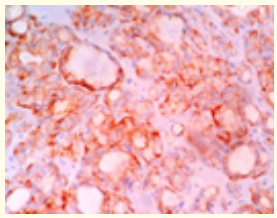

Figure 13: CK 7.

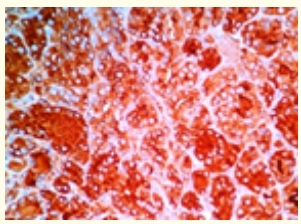

Figure 14: Thyroglobulin.

Patient was sent for CBCT examination and it confirmed the metastatic lesion in right mandible region with primary in thyroid.

Discussion

Metastases causes cancer cells to escape from the primary tumour, survive in circulation, seed at distant sites and grow(8). This important feature helps tumours in their progression and its spread [9]. The clinical presentation of metastatic tumours can be variable and may mimic a benign lesion which may lead to erroneous diagnosis or create diagnostic dilemma. The clinical presentation of the metastatic lesions depends upon various oral sites [10], for example in jawbones, majority of the cases presents as rapidly progressive swelling, pain, paresthesia, difficulty in chewing, dys-

phagia, disfigurement and bleeding [11]. Recent studies on the mechanism of metastasis to bone have shown that cancer cells alter the physiologic balance between bone resorption and bone formation. In some tumours like breast cancer metastases are frequently osteolytic and so there is overexpression of osteoclasts, inducing factors like parathyroid hormone–related protein, interleukin (IL)-8, and IL-11. Likewise, in case of osteoblastic metastasis there is overexpression of osteoblast-mediating factors, such as bone morphogenetic proteins, Wnt family ligands, endothelin 1, and platelet derived growth factors (PGDF) [12].

Lung adenocarcinoma (pulmonary adenocarcinoma) is a common histological form of lung cancer which shows certain distinct architectural, cytological, or molecular features, including glandular or ductal formation or production of mucus [13]. In majority of the cases of oral metastases, the primary focus has been diagnosed and treated. However, in few cases, oral metastasis represents the initial finding, which ultimately leads to the detection of a hidden malignant lesion [11].

Adenocarcinoma of mandible whether primary or metastatic, poses difficulty to diagnose clinically, but the actual danger arises in identifying the primary focus accurately. Whenever any malignant tumour is encountered in the head and neck region, metastasis must be included in the differential diagnosis [14]. Study done by Olak J et al showed that in males, the rate of lung carcinoma metastasis is around 31% and frequently seen in the soft palate and gingival areas than jaw bones [15]. In such cases, the metastasis occurs by bypassing the venous plexus from the lungs to the oral tissues. Oral soft tissues especially gingiva, which presents rich capillary network can trap malignant cells. The persistent chronic inflammation of gingival tissue resulting in disruption in basement membrane, that helps tumour cells to enter into blood vessels of connective tissue [4].

Studies done by Emre and Ehab shows that mandible is the most frequent location for metastasis among jaw bones. In the mandible, ramus and angle are more commonly involved. They concluded that due to the better vascularity propensity of metastasis to posterior mandible is more as compared to maxilla [16]. A few investigators believe that metastasis to jaw bone through hematogenous route requires the presence of hematopoietically active bone marrow well connected with the sinusoidal vascular spaces at the site of deposition of malignant cells [17,18].

Thyroid carcinoma has four different histopathological variant -papillary, follicular, medullary and anaplastic. Follicular thyroid carcinoma (FTC) is the second most common cancer. FTC arises from the follicular cells and resembles the normal microscopic pattern of the thyroid. Papillary and follicular variants are well differentiated, treatable and usually have a good prognosis but FTC is more aggressive than papillary variant due to mutation in p21 Ras oncogene [19]. FTC more commonly seen in females above 40 yrs. Till date only few cases of metastasis has been documented in oral cavity sites like mandible, base of the tongue and labial mucosa. Distant metastasis with primary presentation is commonly seen but distant metastasis without primary presentation is uncommon [20].

The histopathological grades ranges from well differentiated to a poorly differentiated tumor. The well-differentiated tumor shows follicles lined with cuboidal cells enclosing an eosinophilic colloid like material with the microfollicular architecture maintained as seen in our case too. These features are associated with a good prognosis. The poorly differentiated lesions present with solid growth, absence of follicles, marked nuclear atypia, and extensive vascular and/or capsular invasion, these features are associated with a worse prognosis [21].

Metastatic tumors are of great importance, since at times their appearance may be the only symptom of an undiscovered underlying malignancy and metastatic lesions may be the first or only clinical manifestation.

Conclusion

Metastasis to the oral cavity is rare and its manifestation indicates a widespread disease progression. Oral metastasis usually appears as a late complication and frequently associated with multiple organ metastases. So, to conclude the diagnosis of oral lesions is utmost important in diagnosing the primary lesion in cases of unknown primary.

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