

## Carcinoma tongue presenting as pathological fracture of right femur

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### Abstract

Occurrence of distant metastasis from a primary in head and neck squamous cell carcinoma is relatively rare when compared to malignancies from other sites. Carcinoma arising from the hypopharynx, oropharynx and oral cavity are associated with the highest incidence of distant metastases. Knowledge of the metastatic potential and also the presentation helps in an early surgical intervention for improving the life expectancy as well as in the quality of life.

We report a rare case of oropharyngeal carcinoma with no neck nodes, where the initial presenting complaint was a pathological fracture in the right femur. The case is being presented due to its rarity.

### Introduction

Squamous cell carcinoma arising in the head and neck region metastasise less frequently as compared to that from other sites. Involvement of the jugular vein increases the incidence of spread. Among primary in the head and neck area hypopharynx, oropharynx and the oral cavity have the highest rate of spread. The size of the primary does not predict or regulate metastasis. An unusual case of carcinoma tongue without any metastasis in the cervical lymph nodes presenting initially with pathological fracture of the right femur is being reported herewith.

### Case Report

A man aged 40 years complained of fracture of the right femur, after a minor trauma. As stated by the patient, he was apparently asymptomatic 15 days back when he started feeling excruciating pain in the right thigh which was sudden in onset, progressive in nature, continuous throughout the day and was aggravated by movement of limb and walking and was relieved to some extent by lying down. He had difficulty in walking since he could not bear the weight on his right leg. A day prior to his admission in the hospital, he fell from the bicycle and developed pain and swelling in the right thigh. On examination the limb movements were painful. X-Ray pelvis showed pathological

fracture in the right subtrochanteric region (Fig. 1a). Ultrasound abdomen did not reveal anything significant. His haematological profile was within normal limits. Serum calcium levels were low 7.8 mg/dl (N=8.5-10.0 mg/dl).

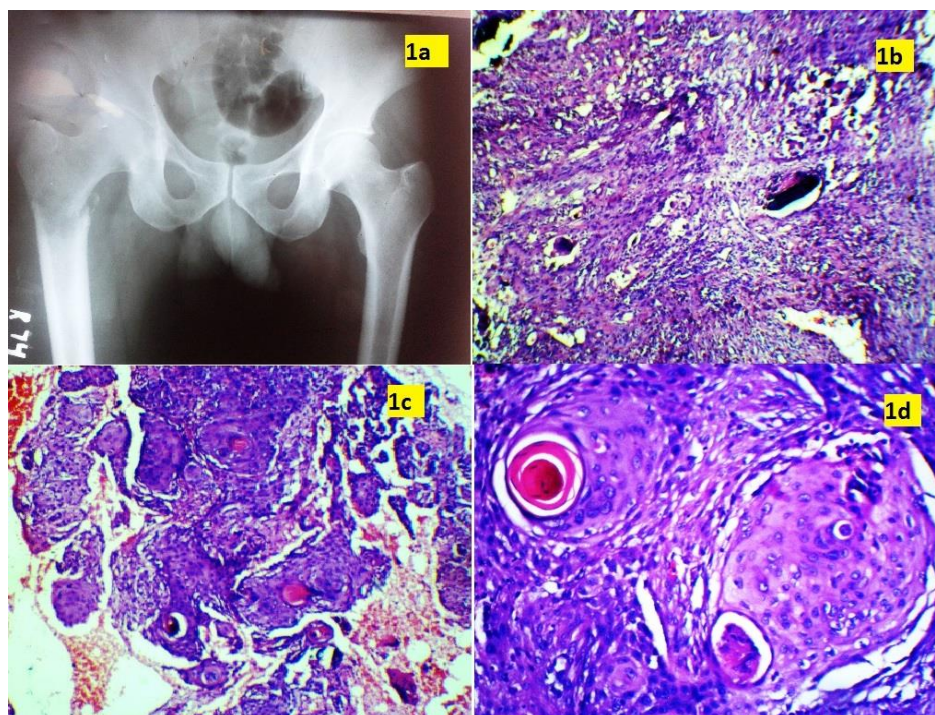
The patient was as a case of squamous cell carcinoma of the left lateral tongue 1 year back for which he got operated upon followed by six cycles of radiotherapy. There has been no history of Tuberculosis, Diabetes or Hypertension.

Curetings from the fracture site were done and the tissue was sent for histopathology. Microscopy showed necrosed bony trabeculae with replacement of the marrow spaces by invading sheets and nests of neoplastic cells. The neoplastic cells were characterized by hyperchromatic to vesicular nuclei showing mild to moderate pleomorphism and clumped chromatin. Cytoplasm was deeply eosinophilic (Fig.1b,1c). Keratin pearls were appreciated (Fig. 1d). The neoplastic cells were invading the nearby skeletal muscles and tissues. The final diagnosis signed out was distant metastasis of squamous cell carcinoma to right femur with primary in the tongue. Even after two years during the post-operative period the patient remained well and healthy.

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**Fig.1** (a): X-Ray pelvis showing Rt. Sub trochanteric fracture; (b): Section showing bony trabeculae with sheets of neoplastic cells (H&E x 40); (c): Microphotograph showing Malignant squamous cells (H&E x 100); (d): High power view showing malignant keratin pearls (H&E x 400)

## Discussion

In India cancer is a leading health problem with nearly more than a million new cases diagnosed each year. Of these about two lac cases occur in the head and neck. India has six times much more cases of head and neck carcinomas than in any other country probably because of low socio-economic status, huge consumption of oral tobacco in its various forms, use of pan containing lime, alcohol and smoking habits. Smoking and alcohol consumption carry cumulative effects.<sup>1</sup> Dietary deficiency of Vitamin A, poor dental hygiene, syphilis and marijuana consumption are other known predisposing factors.<sup>2</sup>

More than 50% of the oropharyngeal squamous cell carcinoma (SCC) are reported to be associated with Human Papilloma Virus (HPV).<sup>3</sup> Of all carcinomas origin from the head and neck region accounts for approximately 5%, majority of which are squamous cell type.<sup>4,5</sup> During the last few years there has been an increasing incidence of oral squamous cell carcinoma. The male: female ratio reported is 4:1. The origin of these malignancies are in the following order with tonsils in 45%, posterior part of tongue in 40%, soft palate in 15% and posterior wall of pharynx in 5%.<sup>4,6</sup>

Distant metastasis originating from the head and neck is about 9 to 11%.<sup>7</sup> Nasopharyngeal carcinomas have the maximum incidence of distant metastasis, whereas carcinoma of the vocal cord have the lowest incidence of distant metastasis. It has been observed that larger the size of the primary more is the chance of metastasis.<sup>8</sup> Some authors however differ in this regard and are of the opinion that the size of the primary does not influence the chances of distant spread.<sup>9</sup> Involvement of three or more lymph nodes,

involvement of jugular group of lymph nodes, involvement of bilateral group of lymph nodes, equal or more than 6 cm of lymph nodes have a high risk of distant metastasis.<sup>10,11</sup>

Very few studies have been published wherein patients present to the physician with distant metastasis as their initial complaint. Pathologic fracture due to osteolysis can be the presenting condition of patients with metastatic disease. Some osteoblastic lesions can also lead to pathological fractures. The most common site of distant metastasis from head and neck malignancies is lung followed by bone, liver, skin, brain and adrenal glands. Cases involving oesophagus, heart, peritoneum, mediastinum, bone marrow and spleen have also been reported. Among bones, the most common site involved is the dorsal vertebrae followed by the lumbar vertebrae, skull, ribs, pelvis, sacrum and clavicle. Ulna, carpal bones and foot bones may also be involved.<sup>12</sup> Metastases from SCC of head and neck may involve the skeletal muscles and the adjoining soft tissues. Early surgery is thus helpful in such cases. This greatly improves not only the quality of life but also the life span.<sup>13</sup>

Other carcinomas with high propensity for bone metastasis include primary from thyroid, melanoma, kidney, GIT, myeloma and, lymphoma. Spread of SCC of head and neck region usually occurs by lymphatic route. The various risk factors include- higher tumour stage, T<sub>4</sub> size of tumour, tumour grade, site of malignancy, depth of tumour invasion, pattern and behavior of tumour markers and perineural involvement by the tumour. Certain histologic types of primary tumour have variable propensity to metastasise distantly, Adenoid cystic carcinoma metastasizes frequently,

even when there is absence of extensive local disease. Squamous cell carcinoma- basilloid type and neuroendocrine carcinomas also metastasise widely.<sup>12</sup> The time interval between diagnosis of primary tumour to the identification of metastatic disease varies from being present at diagnosis to a maximum of 3.5 years. Occurrence of metastasis to distant sites greatly impacts the survival of the patient and also affects the treatment protocol. In patients where the cancer is in an advanced stage, the risk of invading the surrounding tissue especially the lymph nodes and distant sites along with development of second malignancy anytime during the survival period of the patient has been documented.<sup>11</sup> Once metastasis to the bones occur, the final outcome is grave. Single bony metastasis has an overall survival of 3-4 months, whereas with multiple bony metastases the survival rate reported is 6-11 months. Early detection using specialized techniques including immunohistochemistry and molecular testing has reported many incipient cases as well.

Oral cancers metastasise involving many procedures such as detachment of the neoplastic cells, increased cell motility and invasion and proliferation and evasion via the lymphatics or the blood vessels. This process is facilitated by the loss of E-Cadherin that reduces the intercellular adhesion thus facilitating their progression and transportation. Also, there is expression of Vimentin and N-Cadherin which promotes elongation of cells and also loss of cell polarity leading to epithelial –mesenchymal transition causing molecular alterations interfering with the behavior of these cells.<sup>13</sup>

## Conclusion

Distant metastases of SCC of the head and neck region reach the peripheral skeletal muscles and adjacent soft tissues. Therefore, an early operative treatment should be an option for patients suffering from a progressive and terminal head and neck tumour, as a considerable good life expectancy can generally result and as the quality of life can be improved or increased to an acceptable level as long as possible. The present case was a known case of carcinoma tongue but even with treatment metastasis occurred. A close follow-up of even the treated cases should be done as is the message via this case.

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