Case Report

Multifocal Intracranial and Spinal Metastasis from Oral Squamous Cell Carcinoma: A Rare Case Report

Abstract

Oral cancer is the second most common cancer in India, with squamous cell carcinoma (SCC) noted in 90% of cases. Distant metastasis (brain metastasis) from oral SCCs is rare. The incidence of intracranial metastasis is about 0.4% and 2%–8% and approximately 5% to 10% of all cancer patients develop spinal metastasis. However, vertebral metastasis is rare form of distant metastasis from SCC of the oral cavity. Multifocal metastases to the brain and spine of primary oral squamous cell carcinomas have not been reported till date which prompted us to report this case. A 35-year-old male with a history of radical resection done for SCC of the buccal mucosa followed by postoperative chemoradiotherapy presented with complaints of headache and convulsions accompanied by severe low backache and left lower limb radiculopathy with no motor or sensory deficit. Positron-emission tomography scan showed increased uptake in the left frontal lobe and in the dorsal and lumbar spine suggestive of metastasis. Magnetic resonance imaging of the brain and spine with contrast was done which showed a well-defined lesion in the left frontal lobe and contrast-enhancing lesions L5, L2, and T5 vertebra levels. Craniectomy with gross total excision of the left frontal lobe lesion was done. Histopathological examination was suggestive of metastatic SCC. The patient was advised for follow-up for spinal decompression followed by radiotherapy. We need to have a high index of suspicion for metastasis in brain and spine lesions in patients who have been diagnosed previously with oral malignancies for prompt management and better life expectancy.

Keywords: *Brain metastasis, buccal mucosa carcinoma, head-and-neck squamous cell carcinoma, oral squamous cell carcinoma, spinal metastasis*

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Introduction

Oral cancer is the eighth most common cancer worldwide and it ranks among the top three types of cancer in India, with squamous cell carcinoma (SCC) noted in 90% of cases.[1,2] Advances in multimodality treatment have led to improvement in locoregional control which leaves long-term survivors at the risk of developing distant metastasis. Head-and-neck primaries commonly metastasize to the lung, liver, bone, kidney, adrenals, and pleura. Brain metastasis (BM) from oral SCCs is rare.[3] The incidence of intracranial metastasis is about 0.4% and 2%–8% of these patients already have spread to the lungs and other extracranial sites.[4] Approximately 5% to 10% of all cancer patients develop spinal metastasis. However, vertebral metastasis is rare form of distant metastasis from SCC of the oral cavity.[5]

Multifocal metastasis to the brain and spine of primary oral squamous cell carcinomas has not been reported till date which prompted us to report this case.

Case Report

A 35-year-old male with a history of oral carcinoma presented with a history of headache and three episodes of convulsions for 7 days. He also had complaints of severe low backache with left lower limb radiculopathy for 4 months. On examination, the patient had no motor or sensory deficit.

One year back, the patient was diagnosed to have left-side moderately differentiated squamous cell carcinoma of the buccal mucosa, stage pT3pN0Mx for which he underwent radical resection (left buccal mucosa composite resection + left supraomohyoid neck dissection + supraclavicular flap reconstruction) and postoperative chemoradiotherapy.

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Positron-emission tomography (PET) scan was done for prognostication which showed increased uptake in the left frontal lobe and in the dorsal and lumbar spine. Increased uptake was not seen in the chest and abdomen. CT of the brain was done for screening which showed a well-defined oval hypodense lesion with eccentric soft-tissue nodule in the left frontal lobe with surrounding perilesional edema causing mass effect [Figure 1a]. Magnetic resonance imaging (MRI) of the brain with contrast was done which showed a well-defined lesion measuring 32(cc) *31(AP) *27 (T) mm in the left frontal lobe involving the superior and middle frontal gyrus which was hypointense on T1 and hyperintense on T2 and showed postcontrast peripheral rim enhancement [Figure 1b]. Contrast-enhanced MRI of the spine was suggestive of a T2 hyperintense and contrast-enhancing 50(cc) *35(t) *45(AP) mm lesion was present at L5 vertebra level extending to the epidural space causing compression of the thecal sac. Contrast-enhancing lesions were also present at the level of L2 and T5 vertebral body [Figure 1c and d].

Craniectomy with gross total excision of space-occupying lesion from the left frontal lobe was done under navigation guidance. Postoperative period was uneventful. Postoperatively, the patient showed no added neurodeficit and computed tomography (CT) of the brain showed gross total excision of the tumor [Figure 2a and b]. Histopathological examination was suggestive of metastatic SCC [Figure 2c and d]. Postoperatively, the patient was administered a lumbar root block for temporary pain relief and was discharged on postoperative day 7. He was advised follow-up for spinal decompression with fixation followed by radiotherapy after 2 weeks. However, the patient was reluctant for any further treatment due to poor affordability and was lost to follow-up.

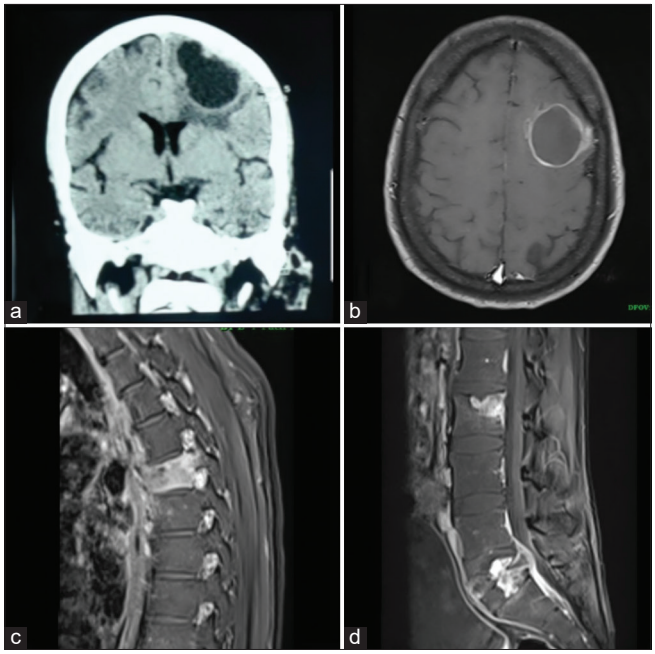

Figure 1: (a) Preoperative computed tomography brain plain in coronal section. (b) Preoperative magnetic resonance imaging of the brain with contrast in axial section. (c) Postcontrast sagittal magnetic resonance imaging of dorsal region showing vertebral lesion at T5 spinal level. (d) Postcontrast sagittal lumbosacral region showing vertebral lesions at L2 and L5 spinal level

Discussion

Head-and-neck SCC (HNSCC) is the second most common malignancy in India of which about 50% comprise oral cavity malignancies. It accounts for 22.7% of all malignancies in males and 6.1% of all malignancies in females.[4]

The identified clinical risk factors for distant metastasis in HNSCC include locoregional control, nodal status (N-classification), tumor site, tumor size (T-classification), histological grade or differentiation, age at diagnosis, and other factors including clinical, radiological, histopathological, and molecular status of the patient.[3]

According to literature, due to advances in surgery and radiotherapy, the 5-year survival rate of head-and-neck cancer is about 50%–55%.[6] Also after definitive radiotherapy, there is a 15% risk of distant metastasis after 5 years and that 5% of patients with head-and-neck cancer who achieved locoregional control died later due to the development of distant metastasis. In addition, patients with surgically treated Stage III and IV SCC develop a significantly higher rate of distant metastasis compared with early-stage SCC.[7]

Although BMs are more commonly seen in advanced lung cancer, breast cancer, and melanoma, they are a rare sequelae

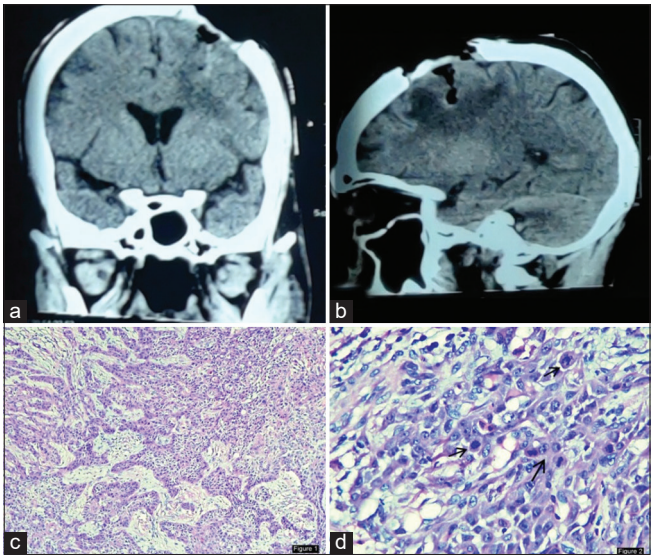

Figure 2: (a) Postoperative computed tomography brain plain in Coronal section. (b) Postoperative computed tomography brain plain in sagittal section. (c) Photomicrograph showing infiltrating tumor tissue growing in trabeculae and strands. H and amp; E × 100. (d) Photomicrograph showing a closer view of tumor cells showing pleomorphic nuclei with prominent nucleoli with increased abnormal mitotic activity (arrow). E to H & E ; E × 400

of HNSCC, occurring in <1% of reported cases.[8] Common areas of metastasis from primaries in HNSCC include the lung, liver, bone, kidney, adrenals, and the pleura.[9]

The other mechanisms of spread to the brain in addition to direct invasion are hematogenous and perineural invasion of the tumor with retrograde deposits.

Bony metastasis of oral SCC is rare and reported only as case reports and almost always secondary to pulmonary involvement. Osseous distant metastasis has commonly been reported in vertebrae, ribs, long bones, ilium, clavicles, and skull. However, in our case, there was no pulmonary involvement seen on the PET scan.[10]

Multiple studies suggest that PET scan is superior to conventional imaging (CT or MRI) for metastatic workup as it may alter management and treatment, especially when unexpected cervical lymph node and/or distant metastases are discovered. However, MRI/CT with contrast of the brain or spine is the investigation of choice if surgical intervention is contemplated which was done in our case.

Surgical resection for metastatic brain lesions is indicated for patients with solitude BM in accessible location or large-sized tumor causing brain edema or hydrocephalus. Patients with controlled disease and good condition are preferred to surgical resection.[9]

Surgical resection for spinal metastasis is indicated in the case of new-onset or progressive neurological deficit secondary to (a) metastatic compression of the spinal cord, (b) spinal instability or collapse by bone destruction, (c) solitary easily resectable spinal metastasis, (d) fracture dislocation of the spine, (e) an enlarging radioresistant tumor, and (f) intractable pain unresponsive to nonsurgical intervention.[6]

Our case presented with a solitary brain lesion along with metastatic compression to the thecal sac. As there was no metastasis to the chest and abdomen, definitive surgical treatment was offered to the patient which included surgical excision of the frontal lesion and the patient was advised for spinal decompression in view of severe back pain followed by radiation therapy. However, the patient was lost to follow-up after excision of the frontal lesion.

Conclusion

We need to have a high index of suspicion for metastasis in brain and spine lesions in patients who have been diagnosed previously with oral malignancies for prompt management and better life expectancy.

The rarity of multifocal involvement of the central nervous system/neural axis due to distal metastasis from oral malignancy, in absence of any other visceral metastasis, prompted us to report this case.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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