Isolated intracranial metastasis from an early glottic cancer: how rare a presentation?

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Abstract The incidence of distant metastasis with laryngeal tumors varies from 1–4% [1]. The lungs are the most frequent site, followed by bone and liver. Intracranial metastases are rarely clinically diagnosed in head neck cancer patients and if present are mainly located in the cerebrum and cerebellum. Early stage glottic squamous carcinoma with subsequent distant metastasis is rare [2]. We report a patient with T1N0 glottic tumor who underwent a curative radiotherapy and on 3 months follow up presented with isolated intracranial metastasis.

Keywords Glottic carcinoma · Metastasis · MRI scan

Introduction

The incidence of distant metastasis with laryngeal tumors varies from 1–4% [1]. The lungs are the most frequent site, followed by bone and liver. Intracranial metastases are rarely clinically diagnosed in head neck cancer patients and if present are mainly located in the cerebrum and cerebellum. Early stage glottic squamous carcinoma with subsequent distant intracranial metastasis is very rare [2].

Case report

A 64 years nonsmoker, non alcoholic, vegetarian male presented with progressive hoarse voice for 3 months. Past medical history revealed hypertension and gastroesophageal reflux. Subsequent direct laryngoscopy and biopsy revealed an ulcerative lesion in anterior third of left vocal cord with no anterior commissural involvement and no restricted mobility. Histological examination showed squamous cell carcinoma of keratinising type. CT scan confirmed the findings and showed no paraglottic and lymph node involvement (Fig. 1). Distant metastasis work-up including chest x-ray and ultra sonogram of abdomen were negative. The tumor was clinically staged T1N0MX and treated with external beam radiotherapy of 60 Gray units in 30 fractions over a period of 6 weeks with a curative intent. Repeat endoscopy 6 weeks post radiotherapy revealed no residual tumor and biopsy from edematous and partially destroyed epiglottis was negative. Subsequent endoscopy 12 weeks post radiotherapy showed partially destroyed epiglottis but no obvious recurrence of the tumor.

Twenty weeks latter he presented to the emergency department with sudden onset seizures (generalized tonic clonic) which lasted for 5 minutes. He regained consciousness immediately and had no obvious focal neurological deficit. Post seizure CT scan of the brain revealed irregular hyper dense lesion in right occipital lobe with surround-

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ing brain edema. Subsequent MRI scan showed irregular hyper intense lesion in the right occipital lobe (Figs. 2 and 3) with surrounding brain edema (1.5×1.2 cms) with another small lesion in the vicinity of main lesion both hyper intense on T1 and T2 weighted images. Neurosurgical and neuroradiological opinions were strongly suggestive of metastasis. He was managed with systemic steroids and other anti edema measures along with antiseizure medications initially and advised for further palliative treatment. After explaining the prognosis and need for further histological confirmation, patient refused for any further treatment and a was discharged from the emergency wing after 24 hrs with oral medications. After 4 months of detection of the brain metastasis, patient presented in emergency wing with episode of seizures lasting for 5–10 minutes and regaining consciousness without any focal neurological deficit. MRI scan revealed another hyperintense lesion in the left parietal lobe with surrounding area of brain infarction. Chest X-ray and ultrasound abdomen showed no evidence of metastasis. Patient subsequently underwent palliative radiotherapy in the department of radiotherapy. Patient came for follow-up 2 months after completion of Palliative radiotherapy. He was detected to have vertebral metastasis and metastasis at other bony sites. Prognosis was explained to the relatives and subsequently patient was lost to follow up.

Discussion

Squamous cell carcinomas of head and neck often spread to the cervical lymph nodes and distant metastasis may occur in late stages. The overall incidence of clinically detected distant metastasis in head and neck squamous cancers is 9–11% [3]. Distant metastasis in laryngeal cancers are reported to range from 1–4% [4]. Among the laryngeal

Fig. 1 Axial computer tomographic scan of neck (radiotherapy planning image) showing T_{1a} tumor of larynx involving left true cord

tumors, supraglottic tumors have the highest incidence of distant metastasis owing to rich lymphatic and vascular supply.

The lungs are the most frequent site of distant metastasis followed by bone and liver [6]. Intracranial metastasis is quite rare and if present are rarely clinically diagnosed and are usually associated with synchronous distant spread to other sites as well. Isolated brain metastasis from a locally controlled glottic carcinoma (stage T3N0) has been reported only once before in English literature [2] and ours is the second case report. Our patient had T1N0 lesion of the glottis, which was well controlled at time of presentation with brain metastasis. Patients with brain metastasis have poor median survival of 3–4 months [1] and invasive biopsy for histological confirmation are often not done where clinical and radiological findings are strongly suggestive of metastatic malignant disease. However recent development of computer assisted stereo tactic navigation and stereo tactic radio surgery may facilitate surgical diagnostic exploration and treatment [1]. In our case, radiological examination (CT and MRI scan of brain) showed large metastatic lesion with adjacent small lesion in the right occipital lobe strongly

Fig. 2 Axial T₁W, CE-MRI showing hyperintense lesion (1.5×1.2 cms) in (R) occipital Lobe of brain

Fig. 3 Sagittal T₁W, CE-MRI showing hyper intense lesion in (R) occipital lobe of brain

suggestive of metastasis and since the patient was reluctant to undergo further biopsy, we did not seek histological confirmation of metastasis.

In a recent large reported series from Netherlands¹, out of 5141 patients with head and neck cancers, only 21 patients (0.4%) were found to have intracranial metastasis. But 8 of them had 2nd primary in the lung and were most likely to have brain metastasis from lung primary rather than from the head and neck. Glottic tumors are accountable only in 3 out of 21 patients and two of them had 2nd primary in the lung. Third patient developed simultaneous lung and brain metastasis with good loco regional control. Hence it's exceedingly rare to have isolated brain metastasis from locally controlled glottic carcinoma.

Review of literature showed sparingly reported case reports of laryngeal tumors with intracranial metastasis, most often with synchronous distant metastasis to other sites or diagnosed postmortem. Warwick–Brown in 1987 reported one case of supraglottic carcinoma with simultaneous multiple metastatic lesions in both temporal lobes and lungs [5]. Weiss et al. and Uzal et al. reported a case each of laryngeal tumor with pituitary metastasis diagnosed ante mortem [6]. Cavernous sinus metastasis from laryngeal primaries has been reported at least in 7 patients so far in the medical literature [6].

The pattern of lymphatic metastatic spread of head and neck tumors are well known. The most common site of metastasis is the cervical lymph nodes. The overall incidence of distant metastasis in head and neck squamous carcinoma is 9–11%, whereas brain metastasis was found clinically in 2–8% if distant metastasis were present. However metastases to brain alone, without distant metastasis to other sites

were only found in 3% [1]. Radiotherapy is the most frequently used treatment for brain metastasis. Untreated brain metastasis has a median survival of 1 month, whereas whole-brain radiotherapy improves the survival to 3–6 months and also significantly improves the symptomatic relief and the quality of life [1, 2].

Unusual sites of reported distant metastasis from laryngeal squamous carcinomas are skin, percutaneous gastrostomy site, spleen, kidney, small intestine, skeletal muscles, penis, cardiac muscles, leptomeninges, patella and axilla etc [7–14].

Conclusion

The possibility of a metastasis should always be considered in patients with previous history of malignancy regardless of the primary site. Even though rare, intracranial metastasis from loco regionally controlled glottic cancers can occur during follow-up. However, in this situation a second primary in the lungs should be investigated.

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