Numb chin syndrome as a manifestation of non-small cell lung cancer

Dear Editor,

Numb chin syndrome is a cranial neuropathy, which is often underappreciated and missed owing to the relative innocuousness of the symptom. However, this is an ominous clinical sign, which might unmask the diagnosis of an underlying neoplasm. We report a patient with metastatic non-small cell lung cancer presenting with left sided numb chin syndrome and discuss the mechanisms and etiologies for the same.

A 60-year-old premorbidly well lady, never smoker, presented to the Emergency Department of our institution with 20 days history of progressively worsening breathlessness on exertion, with occasional left sided atypical chest pain. This was associated with numbness of her chin for 1 month. On further probing, she also complained of significant loss of weight and appetite over the past 3 months. On examination, she was afebrile, her heart rate was 96/min, regular, blood pressure was 130/90 mm Hg and respiratory rate was 40/min. She was hypoxemic on room air (SpO2: 86%). Jugular venous pressure was elevated and non-pulsatile. She was pale and a hard, 2 cm × 2 cm, left supraclavicular lymph node was palpable. Cardiac auscultation revealed muffled heart sounds. Baseline ECG showed sinus tachycardia and chest X-ray [Figure 1] showed cardiomegaly with a homogenous opacity in the left upper zone. Emergency echocardiogram showed a massive pericardial effusion with cardiac tamponade. She underwent emergency pericardiocentesis and a pigtail catheter was inserted for drainage. Pericardial fluid was positive for malignant cells.

Computerized tomography (CT) scan of the thorax showed a 4.1 cm × 2.9 cm well-defined, lobulated mass in the upper lobe of the left lung with significant mediastinal adenopathy [Figure 2]. CT guided biopsy of this mass was reported as acinar adenocarcinoma of the lung (Immunohistochemistry profile: Thyroid transcription factor-1 [TTF-1] positive, cytokeratin [CK]-7 positive and CK-20 negative). Mutation analysis on the tumor revealed a mutation in exon 21 of the epidermal growth factor receptor (EGFR) gene (L858R). Further evaluation for metastases revealed multiple bony metastases [Figure 3], including the left mandible. Thus, her symptom of numbness of the chin was attributed to probable infiltration of the mental branch of the left inferior alveolar nerve by the bony metastasis involving the left mandible. She improved symptomatically and the pigtail drain was removed. She is currently receiving palliative first line therapy with Gefitinib.

First described in 1830 by Charles Bell in his monograph "Nervous system of the human body," the numb chin

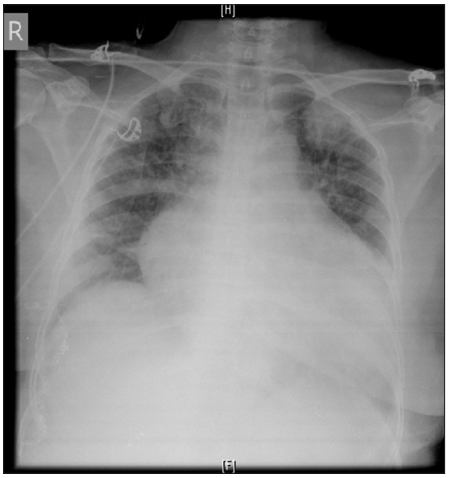

Figure 1: Chest X-ray showing cardiomegaly and an opacity in the left upper zone

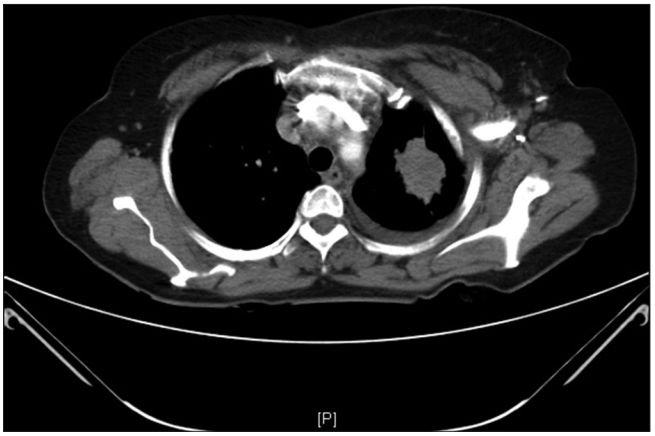

Figure 2: Computerized tomography thorax showing mass lesion in the left upper lobe

syndrome is a cranial neuropathy which is characterized by involvement of the mental branch of the inferior alveolar nerve, which in turn is a branch of the mandibular division of the trigeminal nerve.[1] The mental nerve is the terminal sensory branch of the inferior alveolar nerve and supplies the skin of the ipsilateral chin and lower lip. Thus, involvement of this nerve leads to a pure sensory neuropathy, which is characterized by hypoesthesia, analgesia or paraesthesia involving the ipsilateral chin and lower lip.

The most common etiology for numb chin syndrome has been metastatic malignancy.[2] Among these, mandibular metastases of hematological and solid organ tumors comprise the majority; followed by base-of-skull bone lesions and leptomeningeal metastases.[2] Other causes of numb chin syndrome include dental disorders such as periapical inflammation, cysts and benign tumors of the mandible, traumatic mandibular fractures, vasculitis and osteonecrosis of the jaw.[2-4]

The mechanisms by which neoplasms can lead to numb chin syndrome include direct compression, perineural

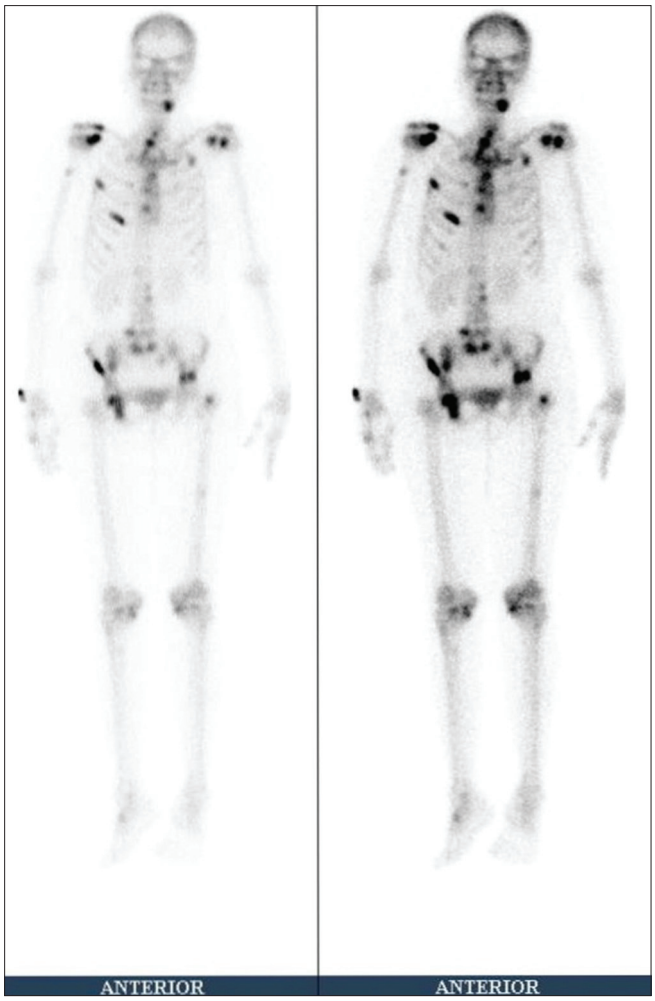

Figure 3: Bone scan showing disseminated skeletal metastases; including the left mandible

invasion, leptomeningeal seeding leading to cranial neuropathy, direct infiltration of the trigeminal ganglion by tumor (in the setting of skull base tumors) or paraneoplastic cranial neuropathy.[5]

Most commonly unilateral, numb chin syndrome may be bilateral in a minority of cases. The diagnosis is clinical; based on a high index of suspicion. Local pain or swelling might be present in case of tumors of the mandible (metastatic and primary). Other clinical signs include percussion-induced pain, loosening of teeth, presence of sequestra and mobility of fractured segments, depending upon the etiology.[6]

The evaluation of a patient with numb chin syndrome revolves around establishing an etiological diagnosis. Often, a detailed history and focused clinical examination helps in localizing the site of primary malignancy. Plain radiographs of the mandible and bone scans are of utility in evaluation of bony lesions of the mandible. CT scan of the neck and thorax or whole body positron emission tomography imaging helps in localizing the primary malignancy. If there is a high index of suspicion for the base of skull lesions or leptomeningeal metastases, magnetic resonance imaging of the brain and skull is essential.

Management of numb chin syndrome secondary to malignancy involves treatment of the primary neoplasm. Local therapy in the form of palliative radiotherapy may help in palliation of symptoms.[7] Based on previous studies, the median survival of a patient with malignancy where the presenting symptom was numb chin syndrome, is a dismal 6 months.[8] However, the prognosis in the setting of numb chin syndrome due to leptomeningeal carcinomatosis is marginally better than those due to mandibular involevemnt; with a median survival of 12 months.[2,9,10]

The objective of this letter is to increase the awareness of this apparently innocuous symptom; which could lead to a more sinister diagnosis of underlying malignancy. Furthermore, in a patient with underlying malignancy, the presence of this syndrome leads to a poorer prognosis.[8,9]

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DOI: 10.4103/2278-330X.119919