

# Numb Chin Syndrome as a Primary Presentation of Metastatic Breast Cancer

Jasjot Sahni, Allan Jones, Glenn Clark, Parish Sedghizadeh

Orofacial Pain and Oral Medicine Program, Ostrow School of Dentistry of University of Southern California, University of Southern California, California, United States of America

## Abstract

Numb chin syndrome (NCS) is characterized by facial neuropathy along the distribution of the mental branch of the trigeminal nerve. We report a case of NCS in a 65-year-old woman who initially presented to her dentist with nonspecific symptoms that she thought were related to a tooth infection. The patient was otherwise healthy and her medical history was significant for breast cancer treated 20 years prior; her cancer was thought to be in complete remission. Upon clinical examination and conventional dental radiography, no pathology was seen such as odontogenic, periodontal, or jawbone infection. Only paresthesia and hypoesthesia was noted unilaterally in her left chin, jaw and lower lip. A computed tomography scan was obtained for further evaluation and revealed lytic metastatic disease involving the right mandible at the level of the mandibular foramen; lytic lesions of the thoracic vertebrae and multiple pulmonary nodules were also noted. Oncologic referral was made immediately which confirmed a diagnosis of metastatic breast cancer. Familiarity with NCS is important for oral health care providers in order to identify etiology and differential diagnosis, as well as to provide appropriate referral and management.

**Keywords:** Jaws, mental nerve neuropathy, metastatic cancer, numb chin syndrome

## INTRODUCTION

Numb chin syndrome (NCS) is a rare sensory neuropathic condition that can be associated with many local or systemic causes. It is usually characterized by unilateral hypoesthesia, dysesthesia, or paresthesia that is localized to the chin, jaw, or lower lip, and may be accompanied by an abnormal sensation of “thickening” of the lower lip, which is similar to the experience of dental anesthesia.<sup>[1]</sup> NCS is also referred to as mental nerve neuropathy because the facial numbness occurs along the distribution of the mental branch of the inferior alveolar portion of the trigeminal nerve.

There are several etiologic factors for NCS, such as dental causes, with iatrogenic ones (oral surgery) being the most common; if not related to an odontogenic cause, this seemingly innocuous complaint is considered a “red flag” symptom of a malignant neoplasm.<sup>[2]</sup> The differential diagnosis for a patient presenting with NCS is broad and may include inflammatory, traumatic, cystic, or neoplastic (primary or metastatic) pathology. Malignancies associated with NCS include hematologic cancers and solid tumors such as lung,

prostate, renal, nasopharyngeal, thyroid, and most commonly breast. Therefore, familiarity with this neuropathic presentation is important for clinicians in order to provide early and accurate diagnosis of the underlying condition, which directly impacts patient prognosis in such cases. We report a case of NCS as a primary symptom and clinical presentation of metastatic breast cancer in an otherwise healthy 65-year-old woman.

## CASE REPORT

A 65-year-old woman presented to her general dentist with signs and symptoms of paresthesia and hypoesthesia involving the area of her left lower lip, jaw, and chin. She was concerned that it was related to a tooth infection or dental problem. The

**Address for correspondence:** Dr. Jasjot Sahni, Orofacial Pain and Oral Medicine Program, Ostrow School of Dentistry of USC, University of Southern California, 925 West 34<sup>th</sup> Street, Rm 133, Los Angeles, California, United States of America. E-mail: [jsahni@usc.edu](mailto:jsahni@usc.edu)

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** [reprints@medknow.com](mailto:reprints@medknow.com)

**How to cite this article:** Sahni J, Jones A, Clark G, Sedghizadeh P. Numb chin syndrome as a primary presentation of metastatic breast cancer. *J Indian Acad Oral Med Radiol* 2017;29:35-8.

**Received:** 03-01-2016 **Accepted:** 29-03-2017 **Published:** 04-08-2017

### Access this article online

#### Quick Response Code:



**Website:**  
[www.jiaomr.in](http://www.jiaomr.in)

**DOI:**  
10.4103/jiaomr.JIAOMR\_2\_16

patient described a feeling of fullness in the area of the chief complaint, and that occasionally her left lower lip felt “numb” as if she had received local anesthesia for dental work. Head and neck examination revealed no overt clinical signs such as a palpable mass, lymphadenopathy or jaw expansion. Intraoral examination revealed no lesions, and there was no gross evidence of dental decay or periodontal disease, and oral hygiene was excellent.

Conventional dental intraoral radiography revealed no evidence of pathology, as well as no periodontal or odontogenic lesions, such as caries, cysts, or apical periodontitis, were seen, as shown in Figure 1. There was no recent history of trauma or dental work in the region of the chief complaint. A review of systems was noncontributory except for an occasional nonproductive cough of undetermined etiology. The patient reported she was healthy, not taking any prescription medications, and was allergic to sulfa drugs. Her past medical history was unremarkable except for treatment of stage IIA invasive lobular carcinoma of the left breast (hormone receptor positive, HER2/neu, and BRCA negative) over 20 years ago involving simple double mastectomy, chemotherapy (tamoxifen), and radiation. The patient stated that her breast cancer was in complete remission and that she had not seen her oncologist for over a decade.

Given the atypical clinical presentation and the patient’s past medical history, and lack of odontogenic or periodontal infection or pathology, the dentist consulted a specialist for further work-up and diagnosis. The specialty work-up included cranial nerve and neurologic examination, which revealed reduced sensation to light touch, vibration, and temperature in the area innervated by the left mental nerve only. In addition, computerized tomography (CT) was ordered with and without contrast for head, neck and chest evaluation. The CT scan showed findings suggestive of lytic metastatic disease involving the left mandible at the mandibular

foramen [Figure 2] as well as the thoracic vertebrae at T3 and T4 [Figure 3]. Multiple pulmonary nodules were identified in the lungs bilaterally [Figure 4] which were also suggestive of metastatic tumor. A board certified medical radiologist confirmed the CT scan as metastatic breast cancer. Oncologic consultation was immediately sought for further work-up and evaluation, and a diagnosis of metastatic breast carcinoma was confirmed.

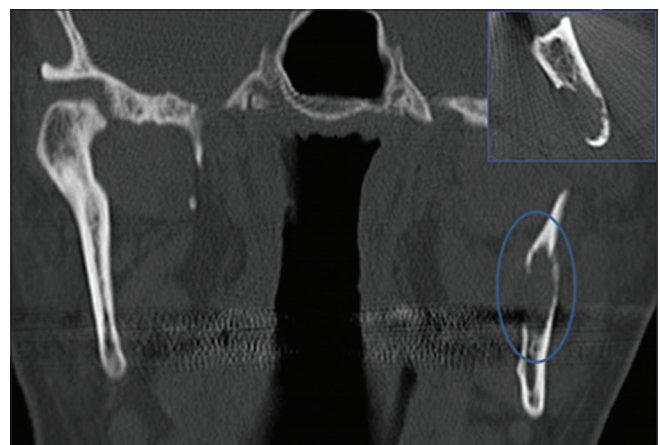
## DISCUSSION

Patients with metastases to the jaws in NCS often have vague, atypical, or innocuous symptoms that can mimic dental infections or other odontogenic or nonodontogenic jaw bone pathology. Metastatic disease in the jaws can cause jaw bone cortical expansion and thinning with destruction, presenting as a palpable mass; it can also present with no clinically identifiable mass on palpation, such as in the case presented here. Therefore, familiarity with performing a comprehensive head and neck examination with cranial nerve or neurologic assessment is of critical importance in such cases, as is familiarity with the differential diagnosis of nerve-related pathology or neuropathy.

For accurate diagnosis in cases like this, a clinician must assess what a patient means by “numbness;” there are several important questions that must be answered by the history which include onset, precipitants, progression, distribution (dermatome), associated symptoms, and comorbidities. Numbness is considered to be a neuropathic presentation, thus the nature of such a finding must be further explored first with neurologic examination followed by other clinical tests or imaging studies, if indicated. Presenting signs or symptoms of metastatic cancer in the dental setting may include paresthesia, hypoesthesia or anesthesia, and dysesthesia along a trigeminal nerve distribution; particularly, the inferior alveolar nerve, and often



**Figure 1:** (a) Panoramic view shows no evidence of pathology. (b) Intraoral periapical view of the lower left posterior aspect of the mandible shows no evidence of pathology. (c) Intraoral view of the lower left anterior aspect of the mandible shows no evidence of pathology



**Figure 2:** Computed tomography findings of mandible: A  $0.8 \times 1.3 \times 1.8$  cm lytic radiolucent lesion involving the left side of the mandible is seen at the mandibular foramen, most compatible with a bony metastasis. There is minimal medial extraosseous tumor spread. In the inset, axial head and neck computerized tomography focused on lytic lesion of the left mandible as seen at the level of the mandibular foramen is visualized



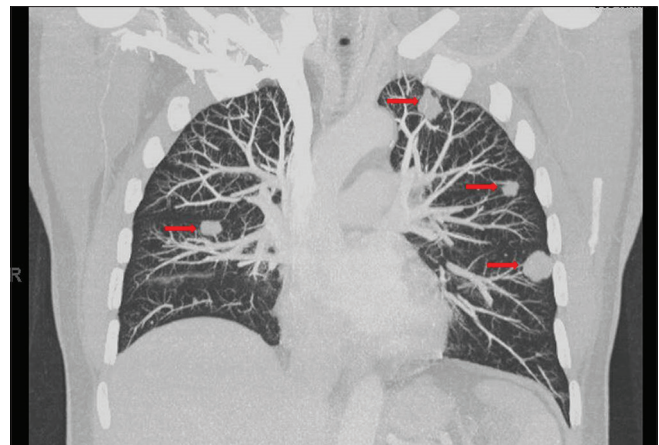
**Figure 3:** Computed tomography findings of vertebra: This sagittal view reveals multiple ill-defined lytic bone lesions suggestive of metastatic disease in relation to thoracic vertebrae T3 and T4 (arrows)

unilateral. Glaser *et al.* described anesthesia and pain as the main symptoms of metastatic mandibular disease, and patients generally report paresthesia or dysesthesia in the peripheral distribution of the inferior alveolar and mental nerves.<sup>[3]</sup> This symptom is the most consistent finding when a neoplasm is located in the ramus and body of the mandible,<sup>[3]</sup> as was the case with our patient. In patients with a history of malignancy, careful evaluation is warranted to rule out metastatic disease when presenting with aforementioned signs or symptoms regardless of the remission status.

One study found that breast and lung were the most common primary tumor sites for females and males, respectively, for metastatic cancer to the jaws.<sup>[4]</sup> The mechanism of such a manifestation in NCS can be direct compression of the mental or inferior alveolar nerve by metastases to the mandible, intracranial involvement of the mandibular nerve by lesions at the base of the skull, and leptomeningeal seeding.<sup>[5]</sup> The inferior alveolar nerve and its terminal branch, the mental nerve, are more prone to invasion by metastatic malignancies that have a predilection to bone as compared to other peripheral or cranial nerves. The reasons for this are not entirely known and are thought to be a result of the tortuous path of the nerve and long course through the bony mandible.<sup>[6]</sup>

Radiographically, metastatic lesions most often are ill-defined and usually are osteolytic (radiolucent) such as in this case as detected in the jawbone and thoracic vertebrae, however, they may be osteoblastic (osteosclerotic or radiopaque) or mixed radiopaque and radiolucent lesions.<sup>[7,8]</sup> In patients with a history of carcinoma, radiographic evaluation should include a CT scan of the mandible, basal skull, head, and neck if possible.<sup>[1]</sup> In this case because of the indeterminate nature of the patient's lung symptoms and the previous history of breast cancer, CT of the chest was also ordered.

Primary tumors such as osteosarcoma of the mandible and squamous cell carcinoma can also be responsible for NCS.



**Figure 4:** Computed tomography findings of the lungs: This coronal view reveals multiple sharply circumscribed non-calcified pulmonary nodules (arrows) compatible with metastatic disease

Among malignant distant neoplasms that metastasize to the mandible, the most frequent is breast cancer followed by primary carcinoma of the lung, thyroid, kidney, prostate, and nasopharynx.<sup>[9]</sup> Other associated neoplasms include hematological malignancies such as acute lymphocytic leukemia, Hodgkin and nonHodgkin lymphoma (NHL), and myeloma. Tumors of the inferior alveolar nerves and mental nerves and their sheaths as well as the compression of the mandibular division of trigeminal nerve at the base of the skull by a tumor mass or leptomeningeal invasion may also cause NCS. Trauma (e.g., fractures) or iatrogenic nerve damage and systemic diseases such as sickle cell anemia, multiple sclerosis, amyloidosis, sarcoidosis, and diabetes mellitus can be responsible for this unusual symptom as well.<sup>[5]</sup> When pain or dysesthesia is associated with a metastatic mandibular lesion it can be mild or severe and intense, and it may mimic a toothache, temporomandibular joint discomfort, osteomyelitis, or atypical trigeminal neuralgia.<sup>[6]</sup> The appearance of oral metastatic lesions is usually a sign of advanced-stage malignant disease, with multiple metastases in other locations as was the case with our patient.

In cases with more widespread anatomic involvement such as in the case presented herein, surgery is not usually indicated. In cases where an oral lesion is the only metastasis, resection with or without radiotherapy may improve prognosis.<sup>[10]</sup> NCS is a condition with a broad differential diagnosis which may require further investigation to identify etiology. NCS can be the first presentation of metastatic cancer to the jaws. Therefore, familiarity with neuropathic pain presentations and evaluation is important for oral health care providers in order to accurately identify etiology and provide appropriate referral or management.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Turner-Iannacci A, Mozaffari E, Stoopler ET. Mental nerve neuropathy: Case report and review. *CJEM* 2003;5:259-62.
2. Carbone M, Della Ferrera F, Carbone L, Gatti G, Carozzo M. Numb chin syndrome as first symptom of diffuse large B-cell lymphoma. *Case Rep Dent* 2014;2014:413162.
3. Glaser C, Lang S, Pruckmayer M, Millesi W, Rasse M, Marosi C, *et al.* Clinical manifestations and diagnostic approach to metastatic cancer of the mandible. *Int J Oral Maxillofac Surg* 1997;26:365-8.
4. D'Silva NJ, Summerlin DJ, Cordell KG, Abdelsayed RA, Tomich CE, Hanks CT, *et al.* Metastatic tumors in the jaws: A retrospective study of 114 cases. *J Am Dent Assoc* 2006;137:1667-72.
5. Lossos A, Siegal T. Numb chin syndrome in cancer patients: Etiology, response to treatment, and prognostic significance. *Neurology* 1992;42:1181-4.
6. Halachmi S, Madeb R, Madjar S, Wald M, River Y, Nativ O. Numb chin syndrome as the presenting symptom of metastatic prostate carcinoma. *Urology* 2000;55:286.
7. Keller EE, Gunderson LL. Bone disease metastatic to the jaws. *J Am Dent Assoc* 1987;115:697-701.
8. Body JJ. Rationale for the use of bisphosphonates in osteoblastic and osteolytic bone lesions. *Breast* 2003;12:S37-44.
9. Panossian M, Gady J, Natarajan E, Eisenberg E. Breast cancer metastatic to the mandible misdiagnosed as parotitis: Report of a case. *J Oral Maxillofac Surg* 2009;67:1333-7.
10. Murillo J, Bagan JV, Hens E, Diaz JM, Leopoldo M. Tumors metastasizing to the oral cavity: A study of 16 cases. *J Oral Maxillofac Surg* 2013;71:1545-51.