Mental Neuropathy (Numb Chin Syndrome) Leading to Diagnosis of Metastatic Mediastinal Cancer

REINHARD E. FRIEDRICH
Oral and Maxillofacial Surgery, Eppendorf University Hospital, University of Hamburg, Germany

Abstract. Neuropathy of the mental nerve is a rare condition that demands accurate differential diagnosis. A 69-year-old male experienced progressive hypoesthesia of the right side of the corner of the mouth and chin, associated with intermittent phases of pain. Plain radiographs and computerised tomography (CT) scans revealed the mental foramen on the top of the toothless mandible and a symmetrically depicted mandibular canal. Surgical exploration demonstrated a tumour inside the mandibular canal, not visible on radiographs. Subsequently performed CT scans revealed an extensive mediastinal tumour with metastasis to multiple lymph nodes and further metastases to the kidney and liver. Diagnosis was small-cell bronchial carcinoma (extensive disease, stage grouping II B, Marburg classification). Palliative chemotherapy was ineffective and the patient died with evidence of tumour progression. The cause of a numb chin needs to be clarified further, and the syndrome should be seriously considered, using thorough diagnosis, including the surgical revision of the affected nerve.

Neuropathy of the mental nerve, also referred to as “numb chin” syndrome, is a rare finding that demands accurate differential diagnosis (1). The finding of a numb chin in a patient with no history of maxillofacial trauma or other obvious dental or osseous diseases as the cause of nerve damage (e.g. oral cancer with mandibular invasion) is more often associated with cancer as the first symptom of metastasis than with non-cancerous conditions, such as multiple sclerosis (2), temporal arteritis (3) and blood disease (4). Mental neuropathy as the initial symptom of a malignant disease has been documented in many types of cancer, predominantly in case reports or small studies (5-19). The organs of origin in patients with neuropathy of the mental nerve due to metastasis are the breast, lung, kidney, thyroid, prostate and stomach (11). Metastatic tumours from these organs are by far the most frequent sites of distant metastasis to the maxillofacial region, associated with a late and usually fatal stage of the malignant disease (6). Rarely other types of cancer may also cause a numb chin by this way of action: ovary (13), multiple myeloma (14), mucoepidermoid carcinoma (15), Burkitt lymphoma (16-18) or acute leukaemia (19). This is a case report about a patient with a unilateral numb chin as the initial symptom of a metastasizing large mediastinal small-cell carcinoma.

Case Report

A 69-year-old male experienced progressive hypoesthesia of the right side of the corner of the mouth and chin, associated with intermittent phases of pain about 4 weeks prior to hospital admission. On admission, the patient located the pain at the mental foramen, with centripetal projection along the nerve route inside the mandible. A computerised tomographic (CT) scan of the brain had been performed prior to admission and had excluded acute cerebral lesions. Supratentorial lesions were related to the patient’s history of stroke at the age of 58 years. A further CT scan of the neck had been performed to exclude pterygomandibular tumour, with no specific findings. A plain chest radiograph had demonstrated age-dependent findings but no space-occupying lesions. The patient was toothless and a possible cause of the pain could have been his dental prosthesis. An orthopantomogram revealed the mental foramen on the top of the mandible and a symmetrically depicted mandibular canal. Whereas the location of the foramina supported the view of a mechanical pressure as a putative cause of triggering the pain, the laterality of the symptom was hardly explained, and the patient did not wear his prosthesis for a long time. Moreover, anaesthesia was almost complete in the right mental nerve region. The medical history of the patient disclosed lung tuberculosis at the age of 23 years, a parotidectomy for pleomorphic adenoma at the age of 37 years, and chronic obstructive pulmonary disease. The patient had stopped smoking at the age of 43.
A revision surgery of the nerve was decided in order to relieve the nerve from direct chewing pressure and to exclude other causes of the neuropathy. However, after osteotomy and exposing the inferior alveolar nerve in the mandibular canal, a greyish mass was detected, invading the nerve and running like a cuff around the nerve and inside the canal. The tumour ran along the nerve proximally up to the inner mandibular angle. Intraoperatively, a frozen section of the tumour was diagnosed as granulation and scary tissue. However, the clinical aspect supported the tentative diagnosis of malignant disease. The tumour was scraped from the nerve. In some sites, the tumour obviously adhered to the nerve bundle but not to the bone. The nerve was lateralised to the vestibulum and the wound was closed by primary intention. Histological investigation of the tumour samples revealed a small-cell carcinoma, probably of bronchial origin. The tumour cells were immunoreactive for NSE and sporadically EMA-positive, negative for LCA and chromogranin. A CT scan of the chest revealed an extensive mediastinal tumour (dimensions: 7.6 × 6.2 × 8 cm) with multiple retrosternal, pretracheal and subcarinal lymph nodes. Further metastases were found in the kidney and liver. Clinical diagnosis was small-cell bronchial carcinoma (extensive disease, stage grouping II B, Marburg classification). A bronchoscopy did not provide aspirates indicative of the tumour. A skeletal scintigraphy disclosed multiple spots of the bones suspected as bone metastases. Palliative chemotherapy was decided and started with carboplatin and etoposide. Bonefos (1500 mg/6 h) was administered once a month to stop further bone invasion. Despite these measures, tumour progression became evident after 2 months, indicated by mediastinal and hepatic tumour growth. Further chemotherapy (topoisomerase inhibitor RFS (9-nitro-camptothecin, 9 NC), EORTC study 16996L) was stopped after 4 weeks, being ineffective. Alternatively, doxorubicin and cyclophosphamide...
were applied (4 cycles). However, 6 months after initial diagnosis, the patient died with evidence of tumour progression, both mediastinal and hepatic, and in the mandibular angle.

Discussion

This report described the fatal course of a patient with numb chin syndrome and the need for surgical exploration to establish diagnosis.

According to Lossos and Siegal, mental neuropathy following metastasis to the third branch of the trigeminal nerve occurs late in the disease (6). These authors evaluated 42 patients with numb chin syndrome and discussed several mechanisms for the symptoms: (i) compression of the mental or inferior alveolar nerve by metastasis to the mandible (20), (ii) metastases to the skull base, and (iii) leptomeningeal spread (12). However, in the patient of this report, neither the CT scan nor the orthopantomogram of the jaws were able to show the tumour. Diagnosis was achieved after surgical revision. Primary and further metastases were detected by means of CT scans and scintigraphy. These methods are recommended for staging in numb chin syndrome with evidence of metastasis (19). Indeed, the lack of radiographic tumour imaging is an indicator of rapid tumour growth: a widening of the inferior alveolar canal is likely to be associated with a slowly growing tumour (21). It is, therefore, recommended that a numb chin without any history of other diseases associated with dissociation of sensory disorders, no evidence of head and neck tumour by imaging techniques and with the lesion being confined to lips and chin, should be explored surgically.

Conclusion

Numb chin syndrome is rare and not well-appreciated as a serious finding in the field of oral and maxillofacial surgery (22). Indeed, dysaesthesia of the mental nerve is frequently associated with obvious dental findings (poor retention of dental prosthesis, diseases of the dental apices affecting the inferior alveolar nerve). In certain cases, the history of trauma passes the differential diagnosis in the accurate direction. This report demonstrated that the cause of a numb chin needs to be clarified further, and the syndrome should be taken seriously, using thorough diagnostics, including the surgical revision of the affected nerve.

References


Received August 19, 2009
Revised April 6, 2010
Accepted April 9, 2010