When Facial Nerve Palsy Hides a Malignancy: A Rare Presentation of Small Cell Carcinoma of the Cervix

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Peripheral facial nerve palsy is an infrequent but well-recognized clinical presentation encountered by primary care and emergency department physicians. Risk factors include diabetes mellitus (DM) and hypertension, both of which are also associated with an increased risk of cerebrovascular accident, which is a critical consideration in the differential diagnosis [1]. Prompt and accurate differentiation between central and peripheral etiologies is crucial in the initial evaluation of facial palsy. Notably, approximately 5% of cases may be secondary to neoplastic processes, whether benign or malignant [1].

Small cell carcinoma of cervix (SCCC) is a rare and aggressive high-grade neuroendocrine tumor [2]. Neurologic manifestations due to brain metastases from neuroendocrine cancers of the cervix are extremely rare, with no prior reports involving the facial nerve [3].

We report a unique case in which peripheral facial nerve palsy was the initial clinical manifestation of SCCC. This case highlights the importance of maintaining a broad differential diagnosis and underscores the pivotal role of a comprehensive history and physical examination as part of a systematic and holistic approach when evaluating patients presenting with facial nerve palsy.

ETHICS CONSIDERATIONS

Informed consent for publication of this case was obtained from the patient's son, as the patient had died before the publication of the manuscript. All potentially identifying information has been omitted to protect patient privacy.

PATIENT DESCRIPTION

A 71-year-old woman presented to the emergency department (ED) with clinical features consistent with left-sided peripheral facial nerve palsy. She was a non-smoker with a medical history of type 2 DM (T2DM), hypertension, and hyperlipidemia. Over the preceding month, she had experienced back pain, and recent laboratory results revealed new-onset microcytic anemia consistent with iron deficiency.

She was evaluated by an ear, nose and throat (ENT) specialist and diagnosed with Bell's palsy, with facial weakness graded as House-Brackmann (HB) grade II–III of VI. Systemic corticosteroid therapy was initiated, and follow-up for the following month was advised.

Two weeks after discharge she attended a community urgent care center where she was advised to continue physiotherapy. No further investigations were conducted until her second ED presentation.

Two months after her first arrival to the ED, she returned with worsening facial weakness, generalized fatigue, anorexia, and an unintentional weight loss of approximately 10 kilograms. Additional neurologic symptoms included left-sided facial paresthesia and dysgeusia, followed by dysphagia, nausea, and vomiting. ENT re-evaluation showed progression of the facial weakness to HB grade V of VI. Neurological examination revealed peripheral left facial palsy in addition to hypoesthesia in the distribution of the left trigeminal nerve. Further evaluation included a brain computed tomography (CT) scan and a carotid and cerebral CT angiography (CTA) to assess the posterior circulation. The patient was subsequently admitted to the internal medicine ward for comprehensive diagnostic workup.

On admission, she had mild sinus tachycardia (101 beats per minute), while other vital signs were within

normal limits. Laboratory studies demonstrated known mild anemia and elevated levels of creatinine 1.36 mg/dl (reference range 0.57–1.11), aspartate aminotransferase 65 U/L (reference range 5–34), lactate dehydrogenase 478 U/L (reference range 125–220) and C-reactive protein 0.81 mg/dl (reference range 0–0.5).

Brain CT demonstrated a space-occupying lesion [Figure 1A]. Carotid and cerebral CTA demonstrated enlarged lymph nodes in the lung apex and mediastinum (data not shown). Brain magnetic resonance imaging identified a space-occupying lesion near the origin of cranial nerve V [Figure 1B], correlating with symptoms involving cranial nerves V and VII.

The combination of her systemic complaints and imaging findings raised suspicion for an underlying malignancy, prompting completion of a contrast-enhanced CT scan of the chest, abdomen, and pelvis. Chest CT revealed bilateral mediastinal and hilar lymphadenopathy [Figure 1C] warranting further evaluation with endobronchial ultrasound (EBUS)-guided biopsy. Abdominopelvic CT unexpectedly identified an enlarged uterus with a heterogeneous and dilated cervix containing hypodense regions, along with multiple enlarged pelvic and abdominal lymph nodes [Figure 1D].

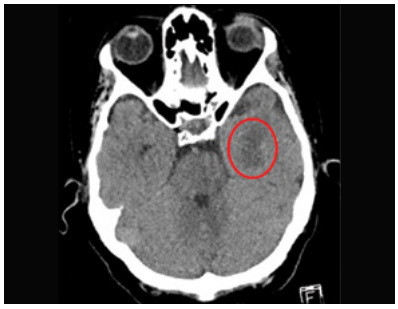
Initially, the patient did not report any gynecologic complaints. However, a subsequent focused history revealed intermittent postmenopausal bleeding over the past month. These symptoms had been previously evaluated in an outpatient gynecologic visit, which included a pelvic ultrasound and a Papanicolaou (PAP) smear, both of which were documented as unremarkable, with no sonographic abnormalities and negative human papillomavirus (HPV) typing, respectively.

Thus, EBUS and a repeat gynecologic evaluation were scheduled.

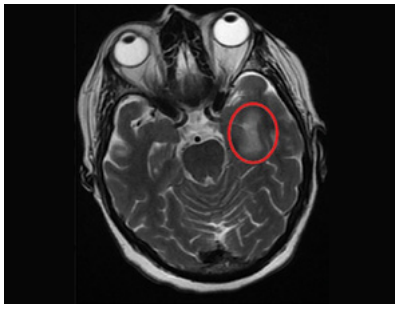
Figure 1. CT scans, MRI, and histology of small cell carcinoma biopsy of the patient

CT = computed tomography, MRI = magnetic resonance imaging

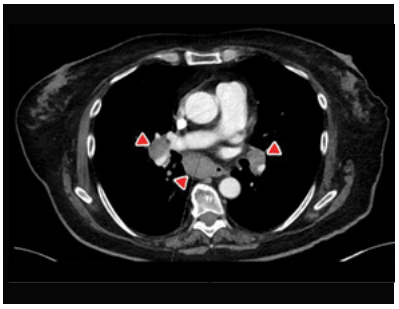
[A] Brain CT: Hypodensity and blurring of white matter anterior to the temporal horn of the left lateral ventricle, suspected as a space-occupying lesion (Red circle)



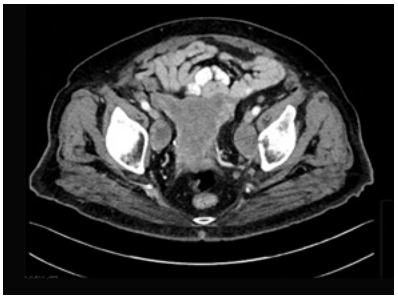
[B] Brain MRI: A space-occupying lesion compressing the origin of cranial nerve V and the pathway of cranial nerve VII causing neuropathic pain and peripheral facial palsy on the left face side, respectively (Red circle)



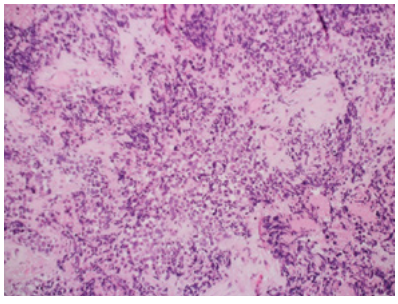
[C] Chest CT: Bilateral mediastinal and hilar lymphadenopathy. Multiple lymph nodes of different sizes on both lungs (Red triangles)



[D] Pelvic CT: Enlarged uterus with space-occupying lesion in the cervix



[E] Histology of small cell carcinoma of the cervix biopsy under light microscope with regular H&E staining



Cytological specimens obtained during EBUS were positive for synaptophysin and p16, consistent with a diagnosis of small cell carcinoma. Gynecological examination, including per vaginam and per speculum assessments, revealed atrophic cervical mucosa and a suspected irregular thickening along the left lateral cervix and vaginal wall. Consequently, transvaginal ultrasound under anesthesia was performed to obtain a biopsy, which confirmed SCCC [Figure 1E].

The patient was subsequently transferred to the oncology department for further evaluation and treatment in accordance with clinical guidelines available at the time. She received two cycles of carboplatin–etoposide chemotherapy, in addition to whole-brain radiotherapy (27 Gy in 9 fractions) with corticosteroid support. Despite this treatment, she developed septic shock secondary to bacteremia in the setting of immunosuppression and died less than 2 months after diagnosis and approximately 4 months after the initial presentation of peripheral facial palsy.

COMMENT

Our case initially appeared to be consistent with Bell's palsy, as the patient presented with mild left-sided peripheral facial nerve palsy. Bell's palsy remains a diagnosis of exclusion, necessitating the careful elimination of clinical *red flags* and alternative, potentially more serious etiologies [1]. Although neoplastic processes are an uncommon cause of facial nerve palsy, they should be considered, particularly when certain warning signs are present. Features suggestive of a tumor-related etiology include progressive facial paralysis over a period of weeks, facial twitching, or involvement of additional cranial nerves. Diagnostic evaluation may be further complicated by the nonspecific nature of symptoms during the acute phase of facial nerve paralysis, which may include ocular irritation, hyperacusis, otalgia, nasal congestion, dysgeusia, dysarthria, and dysphagia. Importantly, a lack of clinical improvement within 3 weeks should prompt further neurological evaluation [1].

In most cases, acute facial palsy is correctly identified as Bell's palsy during the initial evaluation by ED clinicians, often without the need for further imaging or laboratory investigations [4]. However, certain factors have been associated with an increased risk of misdiagnosis, including advanced age (with risk rising with each decade beyond the median age of 45 years), DM, and absence of private health insurance [4]. Our patient exhibited several of these risk factors: she was 71 years old, diagnosed with T2DM, and lacked long-term care insurance. Moreover, she was a Russian-speaking immigrant of low socioeconomic status who lived alone with limited social support. Although her only child was involved and caring, he was unable to provide consistent caregiving on his own due to the complexity of her medical condition and limited financial resources. These social determinants of health, compounded by language barriers and cultural differences, likely contributed to reduced access to care and delays in seeking or utilizing medical services.

Neuroendocrine tumors of the cervix are classified as low grade or high grade [2]. Emerging evidence suggests a strong association between high-grade neuroendocrine carcinomas and HPV infection, particularly with high-risk subtypes such as HPV16 and HPV18 [2]. Nevertheless, due to the typically aggressive nature and high endocervical location of these tumors, PAP smear screening exhibits reduced sensitivity in their detection [5]. In this case, the patient had a recent normal PAP smear with negative HPV typing, making the diagnosis particularly unusual. Nonetheless, given the known limitations of cytologic screening for these tumor types, HPV involvement in the tumor cannot be definitively excluded.

In contrast to the predominantly local spread observed in the more common squamous cell carcinoma and adenocarcinoma subtypes of the cervix, high-grade neuroendocrine carcinomas of the cervix are highly aggressive, characterized by early lymphatic and hematogenous dissemination. Consequently, most patients are diagnosed at advanced stage, with a reported median survival of less than 2 years [2].

Treatment is typically multimodal. Early-stage or localized disease is managed with surgery, radiation, and chemotherapy, while advanced disease is treated with combined chemoradiation [2]. Due to limited prospective data, regimens are largely adapted from small-cell lung carcinoma, given the histological and clinical similarities [2].

Reports of brain metastases originating from tumors of the cervix are exceedingly rare. They appear somewhat more common in neuroendocrine tumors of the cervix, reflecting their aggressive nature, but usually present with non-specific symptoms and occur alongside liver and lung metastases [2,3,5]. Therefore, current guidelines recommend neuroimaging only in the presence of neurological symptoms or evidence of liver or lung metastases [2]. There were no other reports of SCCC or other neuroendocrine tumors of the cervix presenting

as facial nerve palsy [3]. In retrospect, our patient exhibited several nonspecific symptoms including progressive facial nerve palsy, generalized weakness, anorexia, significant weight loss, and postmenopausal bleeding. However, the diagnosis of SCCC was reached only after the patient's facial nerve palsy failed to improve with standard therapy one month after evaluation for postmenopausal bleeding and 2 months after the initial neurological presentation. Thus, peripheral facial nerve palsy served as the initial clinical manifestation of this rare malignancy. To the best of our knowledge, after reviewing the literature, ours is the first published case of such a presentation. Beyond its atypical presentation, the case highlights three key principles in clinical practice.

First, it reflects both the utility and limitations of *Occam's razor.* While the initial diagnosis of idiopathic Bell's palsy, and the subsequent steroidal treatment seemed reasonable given the patient's apparently isolated peripheral facial weakness, the failure to improve prompted a broader workup that revealed an underlying malignancy. Although the systemic features, including weight loss, anorexia, and postmenopausal bleeding, seemed unrelated at first, they were early clues that deserved greater consideration. This observation underscores the need to balance diagnostic simplicity with clinical vigilance and a critical perspective, particularly when symptoms fall outside common patterns. Clinicians should always be prepared to reassess and challenge the initial hypothesis.

Second, this case demonstrates the gravity of a case manager with a holistic approach. The patient was evaluated by multiple specialists for isolated symptoms, yet the lack of a case manager integrating the clinical findings and supervising the diagnostic process likely contributed to a delay in diagnosis. In addition, there was no structured follow-up in the community after her initial ED discharge, reflecting another gap in continuity of care and highlighting the importance of closer integration between hospital and primary care. Ultimately, the coordinated efforts of the internal medicine physician, together with a multidisciplinary team including radiologists, pulmonologists, gynecologists, and pathologists, led to the correct diagnosis.

Last, this case illustrates how social determinants of health such as language barriers, cultural differences, socioeconomic status, and limited access to care can significantly delay diagnosis and treatment. The patient, a Russian-speaking immigrant of low socioeconomic status, encountered substantial challenges in navigating the healthcare system. These disparities likely contributed to the delayed recognition of a rare and aggressive malignancy. Addressing such gaps requires proactive measures to promote equitable, culturally competent healthcare for all patients, regardless of their background.

CONCLUSIONS

This case exemplifies an unusual neurological presentation of peripheral facial nerve palsy as the first manifestation of SCCC, a rare and aggressive malignancy. More broadly, it emphasizes critical principles of clinical practice, such as the essential role of a case manager, the necessity of a systematic and holistic diagnostic approach, and the influence of cultural and language barriers. We stress the importance of a biopsychosocial perspective in patient care.

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As a child I was taught that to tell the truth was often painful.
As an adult I have learned that not to tell the truth is more painful,
and that the fear of telling the truth -- whatever the truth may be --
that fear is the most painful sensation of a moral life.

June Jordan (1936–2002), American poet, essayist, teacher, and activist