Parapharyngeal Tumor Mimicking Cervicogenic Headache

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Nasopharyngeal cancer can occur in any age group and is often misdiagnosed. Cervicogenic headache (CEH) is a clinical condition, putatively originating from nociceptive structures in the neck. A patient with CEH-like symptoms occurring as a result of nasopharyngeal cancer invasion is reported. A 77-year-old man was admitted to the anesthesiology department (pain unit) with a 3-month history of severe unilateral headache. The headache began in the right part of the neck and spread to the right frontoorbital region and was always unilateral. There was no history of neck trauma, and the headache did not increase with neck movement. Analgesics were ineffective. The visual analog scale score for pain was 6. Neurological examination demonstrated tenderness over the right greater occipital nerve and reduced range of motion in the cervical spine. Cervical computerized tomography revealed a solid tumor in the right parapharyngeal region, adjacent to the C2-C3 vertebrae. To the authors' knowledge, this is the first case in the literature of tumoral invasion of nasopharyngeal cancer presenting as CEH. Cervical neuroimaging is obligatory in patients with late-onset, severe CEH. J OROFAC PAIN 2008;22:71–74

Key words: cervical neuroimaging, cervicogenic headache, elderly, headache, parapharyngeal tumor

Nasopharyngeal cancer (NPC) can occur in any age group. The complaints of patients with NPC are related to the primary tumor and the degree of spread. It is often misdiagnosed because a variety of signs and symptoms may be so subtle and discreet as to cause diagnostic difficulties during examination. At times there may also be difficulties in examining the nasopharynx. Even physicians experienced in the examination and diagnosis of disorders in this region may encounter such difficulties.[1]

Cervicogenic headache (CEH) is a clinical condition. It supposedly originates from nociceptive structures in the neck[2–4] that have not yet been clearly identified. There may be various underlying pathophysiologic mechanisms in CEH, such as an intervertebral disc dysfunction.[2–4] Although the cause is not always possible to identify, in some cases CEH can be linked to trauma or craniocervical abnormalities.[5] In this communication, a patient with a CEH-like condition secondary to NPC invasion is presented.

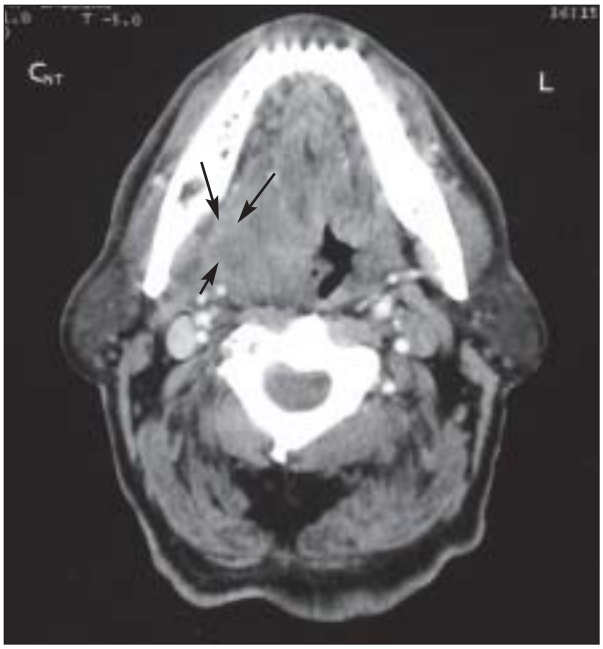

Fig 1 Solid tumor can be seen *(arrows)* in the right parapharyngeal region adjacent to the C2 vertebra.

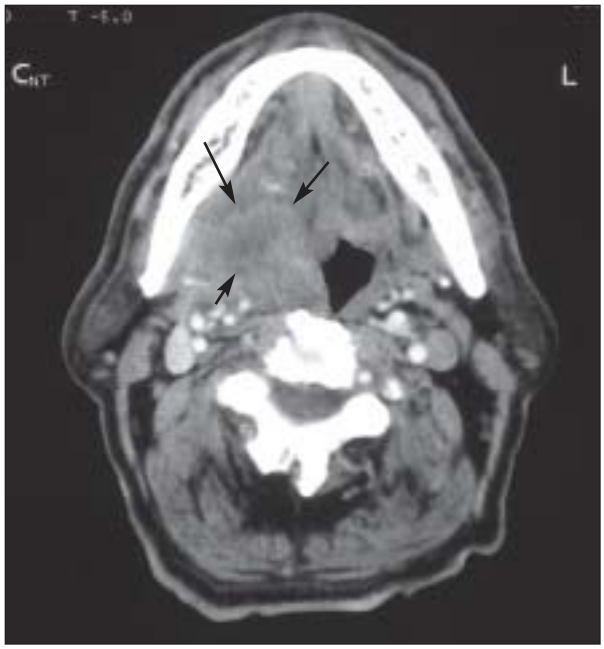

Fig 2 Solid tumor is apparent *(arrows)* in the right parapharyngeal region adjacent to the C3 vertebra.

Case Report

A 77-year-old man was admitted to the anesthesiology department (pain unit) because of severe, unilateral headache of 3 months' duration. Cranial computerized tomography (CT), complete blood count, liver function tests, coagulation parameters, kidney function tests, plasma electrolytes, plasma lipid levels, serum vitamin B12 and folate, and thyroid function tests were all normal both at the time of presentation and 4 months previously. (The patient had been evaluated in the neurology department 4 months previously for another reason.) The patient had a history of hypertension. At the time of admission, he had been awakening around 3 a.m. because of severe, invariably unilateral headache, which continued for at least 3 to 4 hours and recently had progressed to become continuous. The headache began in the right nuchal area and spread to the right fronto-orbital region. Clinical signs, such as nausea, vomiting, photophobia, and phonophobia were lacking. There were no additional symptoms such as lacrimation, rhinorrhea, or sweating. There was no history of neck trauma. The patient gave the pain a score of 6 on a visual analog scale (VAS) where 0 indicated "no pain" and 10 "the most severe pain possible,"and analgesics were ineffective. Neurologic examination demonstrated tenderness over the right greater occipital nerve (GON) and reduced cervical range of motion. Headache could be precipitated by external pressure in the GON area. There were no other abnormalities on physical examination. Cervical CT revealed a solid tumor in the right parapharyngeal region, adjacent to the C2-C3 vertebrae on the right side (Figs 1 and 2). Otorhinolaryngological examination demonstrated parapharyngeal spreading of the tumor to the tongue on the right side. Aside from dysphagia, no symptoms concerning this region were obviously present. On presurgical evaluation, a large aneurysm was detected in the descending, ascending, and thoracic aorta. Neither nerve bocks of the GON, lesser occipital nerve, or C2 or C3 nor operative treatment could be performed because of patient refusal. Magnetic resonance imaging (MRI) of the actual area could not be carried out because of the patient's financial constraints. He died 1 month after discovery of the tumor.

Discussion

In NPC, cranial neuropathy results from the upward extension of the tumor through the skull base. The combination of involvement of cranial nerves and radiographic demonstration of pathology provides evidence for an invasion of the base of the middle fossa. Such an invasion usually takes place in the foramen lacerum area. The anterior group of cranial nerves (I to VI) may be involved via the so-called petrous-sphenoid route, whereas the posterior group of cranial nerves (VII to XII) may be involved through extension along the base of the posterior fossa via the retro-parotidean route. Nerve VI is usually the first to become involved, with ensuing diplopia. Ophthalmoplegia reflects the involvement of cranial nerves III, IV, and VI and indicates tumor extension to the superior orbital fissure or cavernous sinus. Tumor infiltration of the fifth cranial nerve can lead to facial pain, facial paresthesia, or a distinctive pain in the neck. A tumor in the proximity of the jugular foramen may lead to paresis/paralysis of cranial nerves IX, X, and XI.[1]

To our knowledge, this is the first case in the literature of tumoral invasion of NPC that presents as CEH. The headache began in the right part of the neck and spread to the right fronto-orbital region. There was imaging evidence of a disorder in the soft tissues of the neck. Headache was precipitated by external pressure to the GON area, which is an obligatory element according to the Cervicogenic Headache International Study Group (CHISG) diagnostic criteria.[6]

CEH is a syndrome characterized by intermittent or continuous unilateral headache without side-shift.[2,3] The term *cervicogenic headache* was introduced by Sjaastad et al[2] in 1982 to describe a distinct headache syndrome, and diagnostic criteria were later published. The pain is believed to originate from the neck. CHISG criteria for the diagnosis of CEH include unilateral head pain, symptoms and signs of neck involvement, reduced range of motion in the neck, mechanical precipitation of exacerbation as well as ipsilateral shoulder and arm pain, nonclustering episodic moderate pain originating in the neck and spreading to the head, and response to root or nerve blockade.[6] In 2004, the International Headache Society (IHS) also proposed diagnostic criteria for CEH.[7]

The patient in the present case apparently fulfilled the CHISG criteria,[6] ie, unilateral pain, mechanical provocation of attacks, nuchal onset of attacks, and reduced range of motion in the neck. However, the patient was 77 years old, an age at which range of motion in the neck is frequently reduced. Therefore, there would not necessarily be a cause-and-effect relationship between the headache and range-of-motion deficit. The mechanical precipitation of pain is a strong diagnostic point. The nocturnal headache episodes reported in the present case may have been mechanically precipitated. However, in the present case, this may have been due to the localization of the tumor. Furthermore, in the present case, the following was regarded as evidence for CEH: *(1)* the pain may have been influenced by pressure over the symptomatic-side GON area and *(2)* the pain began in the nuchal area. The latter is emerging as a strong diagnostic factor in CEH. The lack of arm pain in the present case may have been due to the high cervical localization of the lesion. All in all, the provisions for the CHISG criteria for CEH appeared to be fulfilled. The IHS CEH criteria,[7] however, were not fulfilled. The criteria of the IHS are interwoven and to a large extent founded upon the result of an operative procedure. No operation could be performed in the present case.

A case with some similar traits was published by Rosenberg et al,[8] who reported a 70-year-old woman presenting with head pain combined with ipsilateral neck pain coexisting with a solitary metastatic lesion infiltrating the left C2 root. In that patient, pain and dysesthesia were present in the contralateral side of the forehead. Some illustrative cases relating CEH to cervical disc herniations have been reported. In these cases, operative treatment had a beneficial effect.[9,10]

The pathophysiological model for this kind of referred pain, as described by Kerr, has been adopted for CEH.[11] Pain generated in any location within the upper/middle cervical territory can be referred to the frontal region via the trigemino-cervical nucleus: increased neuronal activity in both the cervical and the trigeminal system follow GON stimulation. The GON originates from the C2-C3 spinal dorsal rami and supplies the posterior medial part of the head with sensory branches.[12] A close relation of the tumor to the C2-C3 level was demonstrated in the present case. Many clinical features of CEH, such as unilateral pain, precipitating factors, and the results of nerve block indicate that peripheral mechanisms play a role in CEH. More research is needed, however, to identify the mechanisms by which neck disorders can lead to headache.[12]

Cervical neuroimaging in CEH has been carried out by several authors, who have reported that the imaging results of patients with pathologic lesions did not differ significantly from those of controls.

There has been close to a consensus in pertinent circles that cervical imaging may not be an adequate approach to the detection of pathological findings underlying CEH pain, such as affected nerve roots, intervertebral joints, and periosteum.[3,13–15]

In the present patient, a CEH-like picture coexisted with a tumoral parapharyngeal invasion. Early nocturnal awakening is informative in severe headache. CEH is usually mild to moderate. Cervical neuroimaging is obligatory in elderly patients with acute and/or atypical CEH, such as CEH with nocturnal awakening.

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