

Occipital Condyle Syndrome Caused by Isolated Bone Metastases from Thyroid Cancer

Abstract

Occipital condyle syndrome is a rare cause of pain in the head which is characterized by severe and persistent unilateral suboccipital headache with unilateral hypoglossal nerve palsy. We report an elderly female who presented with dysarthria and suboccipital headache. On further evaluation, she was found to have a solitary bone metastases from thyroid cancer. She was treated with local radiation therapy for pain relief, total thyroidectomy, and high-dose radioiodine therapy. The patient is presently free of pain with very good control of the thyroid cancer status.

Keywords: *Occipital condyle syndrome, radioiodine ablation, skull base, thyroid cancer*

Introduction

Occipital condyle syndrome (OCS) is a rare cause of pain in the head which is characterized by severe and persistent unilateral suboccipital headache with unilateral hypoglossal nerve palsy. Symptoms are usually worsened by rotating the head to the nonpainful side. The pain is usually simultaneous or antedated by symptoms of hypoglossal nerve palsy. We present a case of isolated bone metastases from differentiated thyroid cancer-causing OCS. Multimodal management of the condition in our patient is also highlighted.

Case Report

A 71-year-old female presented to neurology department with a history of severe pain in the right side posterior aspect of the head for 2 months' duration. The pain was gradually increasing in intensity. She also complained of slurring of speech. She was a known case of diabetes mellitus on treatment for the past 10 years. On examination, there was slight deviation of the tongue to the left side with fasciculations. There was also a neck swelling which moved with deglutition. Fine-needle aspiration cytology of the neck swelling showed colloid goiter.

She was advised magnetic resonance imaging (MRI) of the brain for evaluation of headache. MRI showed altered

signal intensity with a lytic lesion in the right condyle of the occipital bone. Neoplastic etiology was suspected, and the patient was subjected to a whole body fluorodeoxyglucose (FDG) positron emission tomography-computed tomography (PET-CT).

FDG PET-CT [Figure 1] showed a metabolically active lytic lesion with minimal soft tissue (21 mm × 16 mm) in the right condyle of the occipital bone. In addition, there was a metabolically active hypoenhancing soft-tissue lesion in the left lobe of thyroid gland measuring (21 mm × 27 mm). No other metabolically active lesion was noted in rest of the organs.

The patient underwent total thyroidectomy subsequently which confirmed the presence of 3.5 cm × 3.3 cm sized follicular variant of papillary thyroid cancer. The patient was referred for radioiodine ablation of the metastases. In view of significant pain in the head, radiotherapy to the metastatic site was planned before radioiodine therapy, and she received 30 Gy in ten fractions.

Whole body iodine scan [Figure 2] performed as per routine protocol, after 15 days of external beam radiotherapy, showed thyroid remnant with an iodine-avid osseous lesion in the occipital bone. No other distant metastases were made out. Her preablative stimulated thyroglobulin level was 203.33 ng/ml. She received 193

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mCi of iodine-131. She, presently, is free of pain and her unstimulated thyroglobulin level after 3 months of radioiodine therapy was 0.95 ng/ml.

She continued to be on follow-up with complaints of worsening dysarthria and deviation of the tongue to the left side. Repeat MRI [Figure 2] (at 5 months after radioactive iodine treatment) showed residual lytic lesion in the right side of skull base extending to the hypoglossal canal with engulfment of the hypoglossal nerve. There was the fatty replacement of the right half of the tongue indicating denervation atrophy. Neurology opinion was obtained for considering steroid treatment but was advised conservative management.

She underwent a repeat whole body iodine scan at 6 months which showed minimal iodine uptake in the occipital condyle [Figure 3]. Her stimulated thyroglobulin level had reduced to 8.4 ng/ml. She received another 150 mCi iodine-131 and is asymptomatic on follow-up.

Discussion

OCS, first recognized by Greenberg, consists of unilateral pain in the occipital region along with an ipsilateral paresis of the hypoglossal nerve.^[1] The 12th cranial nerve arises from the motor nucleus in medulla, exits the base of the skull through the hypoglossal canal in the occipital bone; it then traverses the neck and innervates the tongue muscles. There is associated with neck stiffness and occipital tenderness which is typically worsened by neck flexion and rotation to the opposite side. Pain is relieved by neck movement to the same side. Pain often precedes hypoglossal nerve palsy.

Skull-base metastases and primary head and neck tumors are commonly associated with OCS with malignancy being the cause in up to half of the patients^[2] A wide variety of malignancies can cause OCS, including metastases from solid tumors of the breast, lung,^[3] prostate,^[4] and gastrointestinal tract,^[5] as well as primary pharyngeal tumors and lymphoma.^[6] Only, a small fraction of patients with OCS has a benign cause for their symptoms.

OCS due to thyroid cancer has been previously described.^[7] The treatment of OCS is challenging. Complete surgical resection is often difficult because of the presence of adjacent vital structures (brainstem, cochlea, and cranial nerves), cerebrospinal fluid leak, and bleeding. No previous study has published the efficacy of iodine therapy in thyroid cancer metastases in patients with OCS. In our index case, there was significant improvement with near complete response to the first dose of iodine therapy. For unresectable and residual tumors, radiation therapy is feasible option.

Radiation therapy provides a significant reduction in pain as was the case with our patient. With newer techniques such as intensity-modulated radiation therapy (IMRT), it is now possible to deliver a high dose to the tumor with minimum side effects to normal tissues.

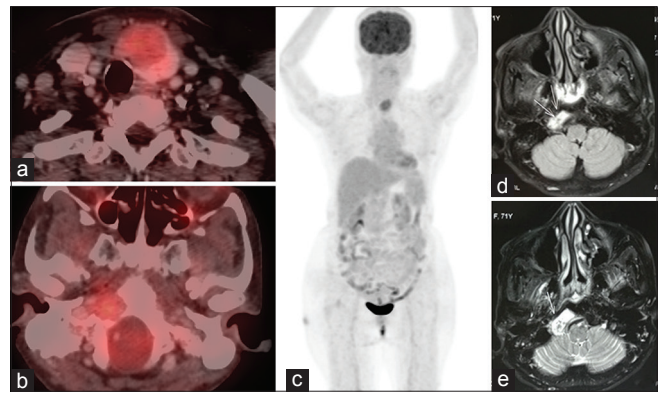


Figure 1: Whole body fluorodeoxyglucose positron emission tomography-computed tomography images performed for identification of source of malignancy in a patient with right occipital condyle metastases, showing the fluorodeoxyglucose avid left lobe of thyroid nodule, (a) fluorodeoxyglucose avid lytic lesion with associated soft tissue in the right occipital condyle. (b) Maximum intensity image (c) did not reveal any other site of abnormal metabolic activity. Magnetic resonance imaging images (d and e) showing the lesion in the right occipital condyle with involvement of the hypoglossal nerve

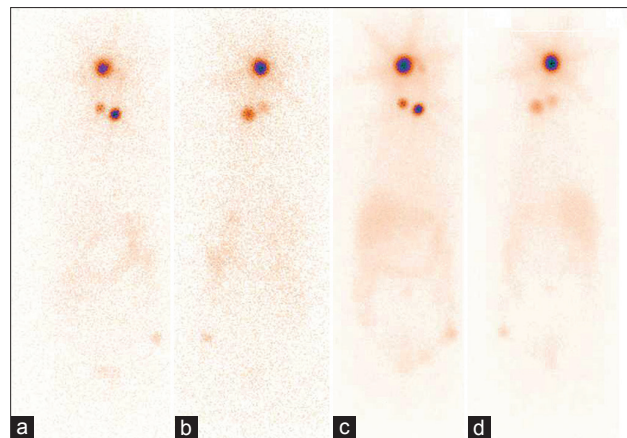


Figure 2: Whole body iodine scan images (pretherapy anterior [a] and posterior [b] showing iodine avid focal lesions in the neck with iodine avidity in the right occipital condyle metastases. Intense iodine uptake is appreciated in the posttherapy scan (c: Anterior and d: Posterior)

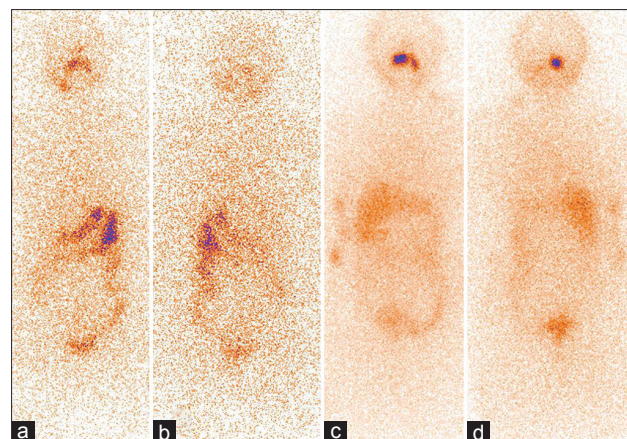


Figure 3: Whole body iodine scan images (6 months after initial iodine therapy anterior [a] and posterior [b] showing ablation of the iodine avid focal lesions in the neck. There is near complete response in the lesion in the right occipital condyle. Mild iodine uptake is appreciated in the posttherapy scan after second dose of high-dose radioiodine therapy (c: Anterior and d: Posterior)

Multimodality treatment of surgery (total thyroidectomy), IMRT (for pain relief), and high-dose radiation therapy (for treating metastases) has provided excellent results in our index case.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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