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EXPERT OPINION: TRIGEMINAL AUTONOMIC CEPHALGIA POST TRANSSPHENOIDAL SURGERY

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A 41-year-old woman with central diabetes insipidus underwent trans-sphenoidal surgery for a magnetic resonance imaging (MRI) abnormality thought to be a pituitary adenoma. Upon exposure of the sella, neurosurgeons did not discover an adenoma but rather lymphocytic material per laboratory analysis leading to a diagnosis of lymphocytic hypophysitis. Upon follow-up care with an endocrinologist, this patient was also diagnosed with secondary adrenal insufficiency.

Postoperatively, the patient reported a new onset of 2 headache syndromes. The first syndrome was described as bouts of right-sided periorbital severe pain associated with right-sided facial edema, lacrimation with conjunctival injection, and nasal congestion. These particular headaches occurred at least twice daily and were less than 30 minutes duration. Although bouts of periorbital headache were mostly right-sided, bilateral pain and facial edema on occasion were reported.

The second pattern of headache was described as brief bouts of neuralgiform pain described as ice pick jabs and jolts in various areas of the scalp on either side that were of sudden onset and were often, but not always, associated with previously described periorbital headache, but were not always ipsilateral to these.

Sumatriptan helped to alleviate the periorbital headaches but a trial of indomethacin for the bouts of neuralgiform pain was not helpful. Prophylaxis for bouts of periorbital headache was changed to verapamil as patient could not tolerate topiramate due to cognitive slowing as a side effect. Ultimately, patient agreed that carbamazepine significantly reduced the number of neuralgiform pain bouts to a tolerable level and was still experiencing 2 bouts of periorbital headaches per day with verapamil as a prophylaxis, but did not find these episodes to be as severe. Although the patient found sumatriptan effective for relief of periorbital headaches, she restricted its usage to no more than 2 days in a given week for fear of transformed migraine with more frequent usage. Thus, a trial of high flow oxygen per face mask was offered as an additional abortive and this was found to be effective.

DISCUSSION

Reported complications of trans-sphenoidal surgery such as pneumocephalus, sphenoidal abscess, thalamic infarct, hemorrhage, meningitis, and hydrocephalus^{1,2} were investigated with a repeat brain MRI and ruled out. When headache duration is less than 4 hours, the differential diagnosis includes cluster and short lasting unilateral neuralgiform headache with conjunctival injection and tearing (SUNCT).³ Although symptoms described seemed typical for a diagnosis of cluster headache they did not meet International Headache Society International Classification of Headache Disorders (International Headache Society Classification ICHD-II) criteria⁴ as there was reports of co-incident contralateral pain and bilateral symptoms on occasion. For cluster headache, pain is always unilateral.⁵ Although pain may rarely alternate sides in cases of hemi-crania continua,^{3,6} symptoms described did not meet criteria as bouts of neuralgiform pain were unresponsive to indomethacin.^{3,4} One could consider SUNCT given the neuralgiform pain; however, episodes were reported to be longer than 240 seconds, thus not meeting diagnostic criteria.⁴ Given the strict ICHD-II criteria, the most likely diagnosis is probable trigeminal autonomic cephalgia (TAC).⁴ A literature search did not yield any prior case reports of a TAC after a trans-sphenoidal procedure. For cases of TAC or TAC-like headaches, a structural lesion may be found but a causal relationship is difficult to establish.⁷ In a review of 31 known cases of TAC or TAC-like headaches secondary to a known structural lesion, symptoms improved after the structural lesion was surgically addressed.⁷ For this particular case report, there were no complaints of headache prior to surgical intervention despite a known structural lesion. Upon initial encounter with this patient, subcutaneous (SC) sumatriptan was chosen as it was felt that symptoms were closely related to cluster headache and this particular medication is the most effective for treating cluster attacks.^{8,9} Controversy of whether patients with cluster headache can develop analgesic rebound headache still exists;¹⁰ hence, the rationale for offering high flow oxygen is an additional abortive therapy. Oxygen inhalation is an excellent abortive therapy for cluster headache. Typical dosing is 100% oxygen via nonrebreather face mask at 7 L/minute to 10 L/minute for 20 minutes.^{6,8} Most clinicians consider verapamil the preventative therapy of choice for both episodic and chronic cluster headache,¹¹ hence why it was chosen for prophylaxis. Corticosteroids (prednisone and dexamethasone) are the most rapidly acting prophylactic agents for cluster headache¹² but avoided for this patient given her

known adrenal failure. The combination of autonomic symptoms with neuralgiform pain closely related to SUNCT was the rationale for utilizing carbamazepine as this has been shown to have some partial effect in patients with SUNCT.

In summary, although this patient did not meet strict diagnostic criteria for cluster headache or SUNCT, her pharmacotherapy was aimed at these 2 primary headache syndromes and she showed improvement.

This case presentation and discussion meets the ACGME requirements for residency training in the following core competency areas: Patient Care, Medical Knowledge, Practice Based Learning and Improvement, and Systems Based Practice.

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EDITOR'S COMMENTS

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This is the first case report of a secondary trigeminal autonomic cephalalgia following transsphenoidal surgery. But is it truly secondary, or was there an underlying TAC, triggered by something about transsphenoidal surgery? Or is this quibbling? The International Classification of Headache Disorders, revised edition (ICHD-IIR), requires for the diagnosis of secondary headaches that the headaches resolve after the presumed cause is removed.¹ This requirement is not met in this case (nor is it likely to be). And what type of TAC is it? The author correctly concludes that this case did not meet diagnostic criteria for cluster headache due to the bilaterality of pain on some occasions, but the author's consideration of SUNCT and hemicrania continua (HC) seem even less likely. For SUNCT, bouts of pain should really be much briefer, and HC is more constant (and unilateral) than this patient's pain was, although stabbing pain can occur. Other than cluster, paroxysmal hemicrania seems the other likely diagnosis, considering the timing and accompanying autonomic features. But the lack of response to indomethacin (assuming an adequate trial was completed) speaks against this.¹

In the end, the best diagnostic "fit" for this patient's headache syndrome is a form of cluster headache—which of course can be accompanied by stabbing headaches.¹ Further support for this is the response this patient achieved with anticluster headache approaches (sumatriptan, oxygen, verapamil). ICHD cluster headache diagnosis could be stretched to fit this presentation, or one could call it "probable cluster headache" (missing one criterion only).

The differential diagnosis list for secondary cluster headache is long, including such entities as carotid artery dissection or aneurysm, arteriovenous malformation, sinus and dental disease of all types, and neoplasms in various sites. But lesions in the region of the pituitary have been reported by a number of authors as cause for cluster or cluster-like headaches.²⁻⁵ This is not particularly surprising given the neuroimaging data suggestive of a hypothalamic locus for cluster headache pathophysiology.⁶

How this patient's headache disorder was brought on by transsphenoidal surgery will probably remain a mystery. The pituitary lesion itself probably was not causal since the patient had no headaches prior to surgery. Rightly, the medical team on this case ruled out such causes as cerebrospinal fluid (CSF) leak, pneumocephalus, abscess, cerebral infarction, hemorrhage, meningitis, and hydrocephalus. Certainly, mild to moderate postoperative pain in periorbital and sinus regions is typical after transsphenoidal surgery, but unless it is due to infectious or other postoperative complications, it is generally transient.⁷ Perhaps this patient's pain arose due to carotid irritation, trigeminal branch injury, or irritation of pain sensitive structures in the sphenoid or cavernous sinus regions leading to a neuropathic chronic pain condition. Presumably, this patient's surgery was performed

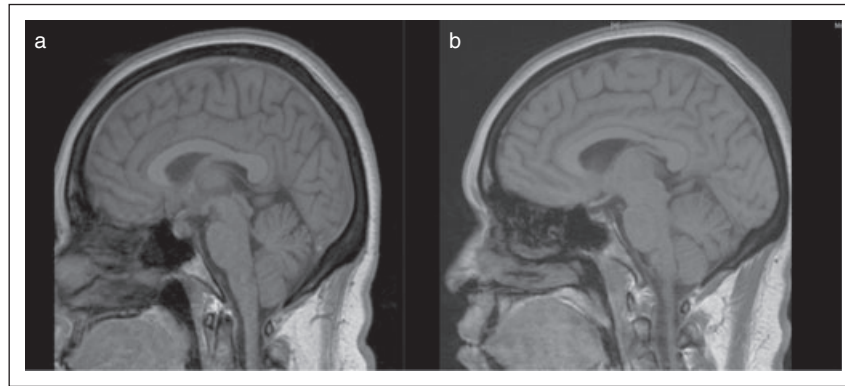


Figure.—(a) MRI prior to surgery showing the pituitary mass lesion. (b) MRI following surgery. MRI = magnetic resonance imaging.

transnasally, rather than the older sublabial approach. If so, and if it was performed through the nostril ipsilateral to the patient's predominant pain, one could postulate a neuropathic referred pain process resulting from injury along the path of the surgical procedure. But the jabs and jolts could not really be explained in this way, and the symptoms as well as treatment response really are reminiscent of true TAC.

At any rate, this case illustrates the pathophysiological complexity inherent in the TAC family. Hopefully, cases of TAC following procedures, trauma, and other instigating factors might shed some light on the neural processes underlying this fascinating group of disorders.

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