



A Rare Case of Horner's Syndrome after Neck Dissection Operation

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Abstract

The classic triad of ipsilateral palpebral ptosis, pupillary miosis, and facial anhidrosis defines Horner's syndrome, which results from cervical sympathetic chain damage. This is an uncommon complication of neck surgery like thyroidectomy and neck dissection. A fifty-two-year-old male patient presented with papillary thyroid carcinoma with lymph nodes metastases, underwent total thyroidectomy with central and left lateral modified radical neck dissection. One day after the operation, the patient presented with signs of Horner's syndrome.

Keywords: Neck surgery; Horner's syndrome; Thyroid cancer

Introduction

In Horner's syndrome (HS), there is ipsilateral upper lid ptosis with mild elevation of the lower lid, ipsilateral mild miosis, and occasionally ipsilateral conjunctival injection, apparent enophthalmos, ipsilateral facial anhidrosis, and dysgeusia [1]. This uncommon complication of neck surgery can occur anywhere from 0.56% to 9.8% of the time [2]. Johann Friedrich Horner first described Claude Bernard-Horner's syndrome (oculosympathetic paresis) in humans in 1869, although Claude Bernard had already described the cervical sympathetic in 1852 through experimental studies on animals. Horner's syndrome results from disruption of sympathetic innervation of the eye and ocular adnexa. Based on their topographic diagnosis, the causes can be classified as central, preganglionic, and postganglionic (Figure 1). A central lesion of the "1st order neuron" is rarely isolated because these lesions are usually associated with neurological symptoms. The most common cause of Wallenberg syndrome is a stroke of the posteroinferior cerebellar artery territory, hypothalamus, brainstem, and spinal cord. Most often, Horner's syndrome is caused by preganglionic lesions known as 2nd-order neurons (iatrogenic). The most

common traumas are those that are caused by iatrogenic methods, including forceps during childbirth, epidural anesthesia, chest tubes, coronary bypass surgeries, and thyroid and parathyroid procedures. As well as lesions of the thoracic outlet (cervical rib, subclavian artery aneurysm), mediastinum (mediastinal tumors), pulmonary apex (Pancoast's tumor), neck (thyroid malignancies) and thoracic spinal cord, Horner's syndrome can be caused by compression of the second order neurons in the mediastinum or lung. Regarding "peripheral" postganglionic causes, cluster migraine, carotid dissection, and carotid stenosis stand out as the most significant examples. In these conditions, cervical sympathetic nerve involvement is the most prevalent neurological symptom and is present in at least half of patients [3].

Case Presentation

A fifty two year old male patient, presented with submental painful swelling for 3 days duration associated with odynophagia, the patient was well, stable vital sign and no signs or symptoms of hyperthyroidism hypothyroidism, the neck examination

was unremarkable and there is no palpable thyroid masses or Cervical lymphadenopathy. TSH was 2.25; thyroid ultrasound showed a left lobe with a well-defined solid hypoechoic nodule (1×0.5×0.3 cm) with punctate calcifications, and the right lobe showed a well-defined hypoechoic nodule (0.3×0.3 cm) without calcifications, with multiple prominent cervical and submandibular rounded lymph nodes with calcifications; ultrasound-guided fine needle aspiration from the thyroid nodule and cervical lymph node showed papillary carcinoma (Bethesda VI) with metastasis to lymph nodes; Then the patient underwent

surgery (total thyroidectomy with central and left lateral modified radical neck dissection (Figure2)), then one day after the operation the patient developed left eye ptosis with miosis. An ultrasound and CT scan were done to exclude hematoma and other reversible causes, and the patient was clinically diagnosed with post-operation Horner syndrome and started on Prednisone. Then, in the follow-up exam after six weeks, the patient showed improvement in his Horner symptoms. The histopathological examination confirmed the original diagnosis of thyroid papillary carcinoma and cervical lymph node metastasis.

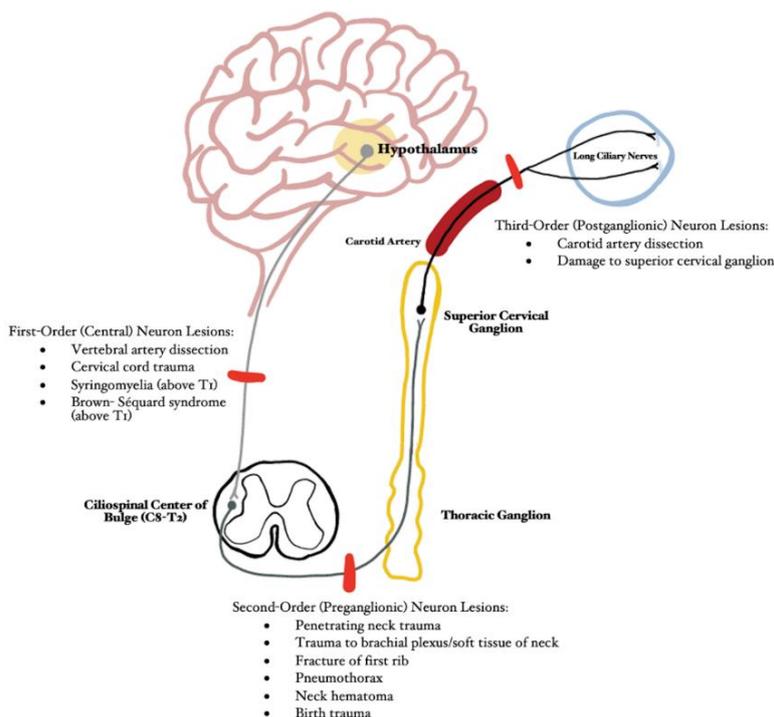


Figure 1: Traumatic Horner Syndrome Pathway (2022, May 11).



Figure 2: Patient neck during the operation.

Discussion

Horner syndrome is characterized by myosis, enophthalmos, ptosis of the eyelids, and vascular dilation of the ipsilateral face following a cervical sympathetic trunk injury [4]. As described in this case report, Horner syndrome is a very rare complication of thyroidectomy as it is caused by compression of the cervical sympathetic chain by a large benign goiter or infiltration by a malignant goiter, with fewer than 30 cases reported so far. After a thyroidectomy with modified radical neck dissection, there are several theories as to why HS occurs. Stretching of the cervical sympathetic chain during lateral retraction is one of them. Sympathetic chain compression due to a postoperative hematoma, ischemia-induced neural damage occurring as a result of a lateral ligature on the inferior thyroid artery trunk, and damage to the communication between the cervical sympathetic chain and the recurrent laryngeal nerve during its identification, As the inferior thyroid artery arches medially from the thyrocervical trunk, the middle cervical ganglion and sympathetic trunk lie close to each other and are in a variable relationship (Figure 3).

As a result of this close, and more importantly, variable, anatomical relationship, the sympathetic trunk and the middle cervical ganglion are highly susceptible to thyroidectomy with modified radical neck dissection complications [5]. When the carotid sheath structures are mobilized during neck dissection, the cervical sympathetic chain and its ganglia may be exposed, most likely during the removal of lymph nodes at neck levels II, III, and IV. During anterior medial retraction and deep cervical fascia dissection, the cervical sympathetic chain can be injured. When traction or compression injuries occur, they may cause Sunderland types I (neurapraxia) or II (axonotmesis) [6]. Horner syndrome is primarily diagnosed clinically, and investigations are done to determine or exclude the cause [7]. The ultrasound and CT scan were performed to rule out alternative explanations because our patient was well before the surgery but started exhibiting these symptoms on the second post-operative day. The main goals of treatment are to treat the syndrome's underlying reversible causes and avoid its irreversible causes. Huang L. et al. described two occurrences of Horner syndrome following thyroidectomy, both of which were treated with oral steroids [8].

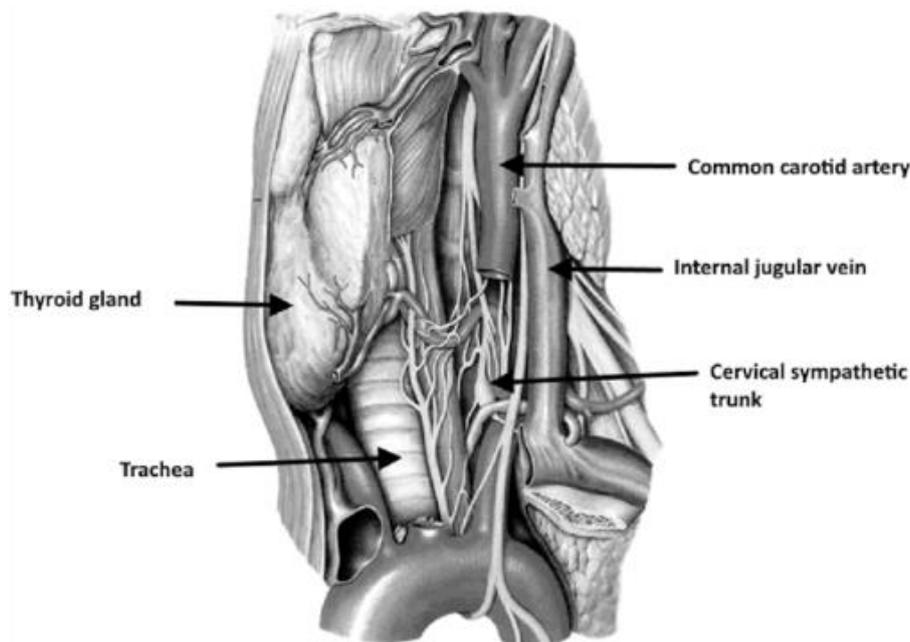


Figure 3: An illustration demonstrating the cervical sympathetic pathway and its anatomical relationship to the thyroid gland.

Conclusion

It is well recognized that Horner's syndrome, which results from cervical sympathetic chain damage after thyroid surgical procedures, is a quite rare thyroidectomy complication, so patients should be informed of this complication before surgery. This

potential and its manifestation should be widely known to surgeons in order to allow for prompt identification and surgical care. Any reversible cause should get early management, such as hematoma, and oral steroids should be started as soon as feasible.

Declaration of Patient Consent

The authors declare that they have obtained all patient consent.

Conflict of Interest

None declared

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