Introduction

The carotid body is a nodule of chemoreceptive tissue in the human body, reddish brown, ellipsoidal structure 5–7 mm in length and 2.5–4 mm in width. It is located on the posterior aspect of the common carotid bifurcation just above the carotid sinus, with a blood supply derived from the external carotid artery and sensory innervations through the glossopharyngeal nerve **(Williams, et al., 1989).**

The carotid body tumors are derived from nonchromaffin paraganglionic tissue analogues of the adrenal medulla. They originate from neural crest cells that have migrated with ganglionic cells from the autonomic nervous system **(Robbins, et al., 1999).**

Paragangliomas are composed of nests of epithelioid cells with finely granular eosinophilic cytoplasm and small round or oval nuclei in a rich capillary network accentuated by silver staining **(Placco, et al., 2000).**

Carotid body tumors are poorly encapsulated and extremely vascular like a hemangioma, with an enveloping network of capillaries and areolar tissue arranged in concentric layers like an onion. Benign tumors rarely exhibit mitotic figures and do not usually invade lymphatics, vascular structures, or nerves **(Baysal and Myers, 2002)**.

The chief cells of the carotid body respond to hypoxia, acidosis, hypotension, hypercarbia, and hyperthermia. The association of carotid body tumors with high altitude habitation, chronic hypoxemia, and familial predilection has been documented. Recent literature has proposed the development of carotid body tumors as a response to the chronic hypoxia in patients with cyanotic congenital heart disease **(Glenner and Grimley, 1968).**

The carotid body paraganglioma is more common in women. Most patients have unilateral tumors, although 3%–4% are bilateral in sporadic cases and about 30% in the familial cases. Malignant carotid body tumors are about 0.5% of all tumors **(Weiss, et al., *2006*).**

Shamblin classified these tumors into 3 groups:

Group I consists of relatively small tumors, which are minimally attached to the carotid vessels; surgical excision is not difficult. Group II tumors are larger, with moderate attachment to the carotid vessels. These tumors are amenable to careful surgical excision. Group III tumors are very large, encasing the carotid vessels and often require arterial resection and grafting **(Van den Berg, et al., 2004)**.

A modification to Shamblin's classification by Luna-Ortiz into I, II, and III, as well as IIIb. The surgical grouping is chiefly based on the relationship of the tumor to the carotid vessels, ICA and ECA. The class IIIb tumors include tumors of any size that are intimately adherent to the Carotid vessels **(Luna-Ortiz, et al., 2006).**

Carotid body paraganglioma often present asymptomatic, painless, slowly growing, non tender neck masses located just anterior to the sternocleidomastoid muscle at the level of the hyoid. The tumor is mobile in the lateral plane but its mobility is limited in the cephalocaudal direction. Occasionally the tumor mass may transmit the carotid pulse or demonstrate a bruit or thrill. It may be presented by dysphasia, odynophagia, and hoarseness of voice or other cranial nerve deficits **(Ebersold, et al., 2001).**

Carotid body paragangliomas are diagnosed by: Doppler ultrasound, carotid artery angiography, cranial computed tomography, magnetic resonance imaging, and CT angiography **(Van den Berg, 2005).**

The differential diagnosis of carotid body tumors includes enlarged lymph nodes, branchial cysts, parotid tumors, thyroid tumors, neurogenic tumors, and carotid artery aneurysms **(Tasar and Yetiser, 2004)**.

Excision is the preferred treatment of Carotid body tumors .CBTs are rare highly vascular lesions that frequently require preoperative embolization via a transarterial route or direct intralesional embolization to gain easier accesses to the tumor vasculature and thus increase the likelihood of complete embolization to minimize surgical morbidity secondary to blood loss. The present controversies surround the role of angiographic embolization, radiation and the use of carotid shunting **(Ozay, et al., *2008*).**

Excision is associated with low mortality and morbidity, although the rate of cranial nerve dysfunction postoperatively is still high and surgical morbidity secondary to blood loss **(Bakoyiannis, et al., *2006*).**