Research Paper MEDICAL SCIENCE

CAROTID BODY TUMOUR EXCISION

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ABSTRACT

A 32 year female patient having asymptomatic carotid body tumour locatedon left side at carotid bifurcationadherent to internal carotidartery wasexcised along with ICA and interposition grafting was done using 8mmptfe graft byprolene 7-0 in contineous manner.Postoperatively patient noticed to have hoarseness of voice and aspiration of solid and liquidfood ,managed conservatively by voicetherapy and oral steroids over a month, patient improved slowly.

SUMMARY OF THE PAPER-Even for benign forms, resection of whole carotid body tumour is recommended as soon as the diagnosis is established because of their unpredictable local invasive behaviour. Advances in diagnostic modalities based on ultrasounds and radioisotope imaging have increased earlier discovery of those tumours even before they become palpable. The nuclear images obtained by Octreoscan SPECT is shown to be very accurate to determine the nature of the neck mass and to localize the cbts; SPECT scan also allows to detect areas of potential postoperative early recurrence.

KEYWORDS CAROTID BODY TUMOUR , INTERPOSITION GRAFTING,PTFE GRAFT

Introduction-

Carotid body tumors are rare neoplasms, although they represent about 65% of head and neck paragangliomas.[1] These tumors develop within the adventitia of the medial aspect of the carotid bifurcation. The following 3 different types of carotid body tumors have been described in the literature:

Familial
Sporadic
Hyperplastic

The sporadic form is the most common type, representing approximately 85% of carotid body tumors. The familial type (10-50%) is more common in younger patients. The hyperplastic form is very common in patients with chronic hypoxia, which includes those patients living at a high altitude (> 5000 feet above sea level), like those patients living in New Mexico, Peru, and Colorado

Case report –a 32 year female patient having

asymptomatic carotid body tumour located on left side at carotid bifurcation with splaying of internal and external carotid artery.

FIGURE 1 about here.

Contrast enhansed CT scan is s/o 5 cm by 5 cm mass arising from internal carotid artery at site of bifurcation.FIGURE 2 about here .DSA given additional confirmatory evidence of unilateral carotid body tumour.

Though surgical excision is treatment of choice but larger the tumour more Is risk of intra and postoperative complications like bleeding,cranial nerves Injury[9.10,11,12],possibility of carotid bypass or vein graft,stroke and death, so Preoperative embolisation was done to decrease intraoperative bleeding and Size of tumour.

Under G/A in supine position with neck turned to right side.

Transverse cervical incision taken along the anterior border of Sternocliedomastoid.Scarmark is invisible in this incision. FIGURE 3 abouthere.After assessing anatomy, superior and inferior control of carotid arteries taken .Tumour found to be adherent to internal carotid artery so after heparinisation,tumour excised along with ICA.FIGURE 4 about here.Interposition grafting was done using 8 mm PTFE graft by prolene 7-0 suture incontineous manner.FIGURE 5 AND 6 about here.

Patient extubated on table,postoperatively patient noticed to have hoarseness ofVoice and aspiration of solid and liquid food.Ryles tube inserted for feeding and neurology reference taken ,advised conservative management like voice therapy and oral steroids. After one month.patient improved slowly. Oral feedingstarted after two month- liquid followed by solid and voice normalisedafter six months.

Discussion-The carotid body is a small, reddish-brown, oval structure, located in the posteromedial aspect of the carotid artery bifurcation. The healthy gland measures 3-5 mm in diameter and weighs less than 15 mg on average.[2] The vast majority of the literature states that the gland is located in the adventitia near the carotid artery bifurcation. However, according to Maxwell et al, most surgeons experienced with carotid body dissection maintain that it is more peripherally located, within periadventitial tissue. This distinction is critical, as dissections in the deeper planes of the carotid artery are associated with higher risk for complications from vessel injury.[7]

The carotid body, which originates in the neural crest, is important in the body's acute adaptation to fluctuating concentrations of oxygen, carbon dioxide, and ph. The carotid body protects the organs from hypoxic damage by releasing neurotransmitters that increase the ventilatory rate when stimulated.

The only known risk factors are the presence of chronic hypoxic stimulation and the genetic predisposition. Carotid body tumors are classified into sporadic, familial, and hyperplastic forms.

Chronic hypoxic conditions, such as patients living at high altitudes or those who have chronic obstructive pulmonary disease or cyanotic heart problems, can overburden the carotid bodies and subsequently lead to hypertrophy, hyperplasia, and neoplasia of the chief cells.[18] This condition is seen in the hyperplastic type of carotid body tumors. However, the mechanism by which reduced oxygen concentrations can lead to CB hyperplasia is unclear.

Carotid body tumors can occur in children; however, carotid body tumors are considered to be a disease of middle age. The mean age of onset is reported to be 45 years.[8] Paragangliomas are inherited in 10-50% of cases. Age of onset in the hereditary group is typically younger, in the second to fourth

decade.[9]

About 5% of carotid body tumors are bilateral and 5-10% are malignant, but these rates are much higher in patients with inherited disease.[10, 11, 12]

Carotid body tumors present most commonly as an asymptomatic palpable neck mass in the anterior triangle of the neck. They are slow-growing tumors that can remain asymptomatic for many years. The doubling time (T_D) of carotid body tumors, as estimated by Jansen et al using sequential imaging, was 7.13 years with a median growth rate of 0.83 mm/year.[17]

On examination, the mass is typically vertically fixed because of its attachment to the bifurcation of the common carotid (Fontaine sign). A bruit can be felt; however, the absence of a bruit does not rule out a carotid body tumor. Vagal body tumors are more cranially located and sometimes project into the lateral pharynx as a pulsatile mass.

Approximately 10% of the cases present with cranial nerve palsy with paralysis of the hypoglossal, glossopharyngeal, recurrent laryngeal, or spinal accessory nerve, or involvement of the sympathetic chain.[14] Carotid body tumors may, therefore, be associated with pain, hoarseness, dysphagia, Horner syndrome, or shoulder drop.

As the tumor enlarges and compresses the carotid artery and the surrounding nerves, other symptoms may also be present, such as pain, tongue paresis, hoarseness, Horner syndrome, and dysphagia.

Fever is an uncommon sign of carotid body tumor, although the literature has reported it as one of the causes of fever of unknown origin.[15] In cases of functional carotid body tumors, symptoms similar to those of pheochromocytoma, such as paroxysmal hypertension, palpitations, and diaphoresis, are seen.

Descriptions of surgery for carotid body tumors have existed for over 100 years. The early reports described significant complications, particularly mortalities secondary to intraoperative bleeding.[3, 4, 5]

In the United States, the earliest successful carotid body tumor resection was performed by Scudder in 1903.[3]

Even into the middle of the 20th century, resecting these tumors remained a problem because of the complications; Hayes Martin, in his textbook of head and neck tumors, recommended against resection of any tumor that is now considered aShamblin type III .[6]

Modern imaging and current surgical and vascular techniques have significantly improved the safety and success of this operation.

Conclusion-Even for benign forms, resection of whole carotid body tumour is recommended as soon as the diagnosis is established because of their unpredictable local invasive behaviour. Advances in diagnostic modalities based on ultrasounds and radioisotope imaging have increased earlier discovery of those tumours even before they become palpable. The nuclear images obtained by Octreoscan SPECT is shown to be very accurate to determine the nature of the neck mass and to localize the cbts; SPECT scan also allows to detect areas of potential postoperative early recurrence.

During follow-up, CCU and radioisotope imaging combined together are sensitive and less invasive methods to detect potential recurrence and to monitor growth progression of unresectable remnants of "these curious little tumors" as defined by F.B. Lund [16].

Complete surgical excision is the only treatment for carotid body tumor (CBT).By proper understanding of anatomy ,excision of carotid body tumor (CBT) seems to be simple and safe.

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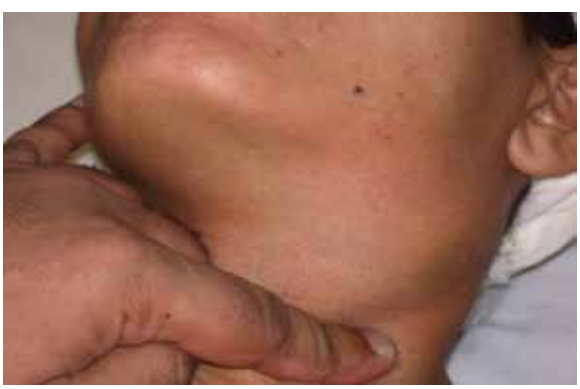

Figure 1 LEFT SIDE CAROTID BODY TUMOUR ANTERIOR TO STERNOCLIEDOMASTOID AT ANGLE OF MANDIBLE

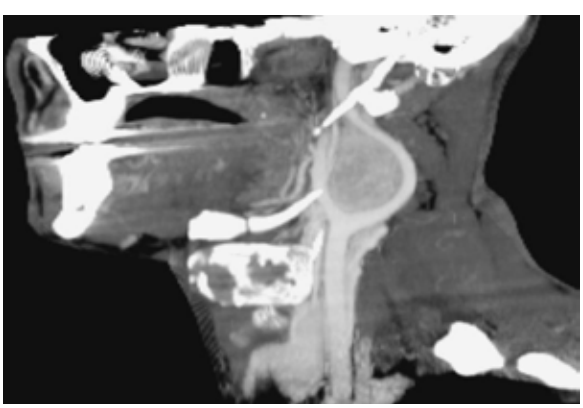

Figure 2 CONTRAST ENHANCED CT SCAN SHOWING CAROTID BODY TUMOUR

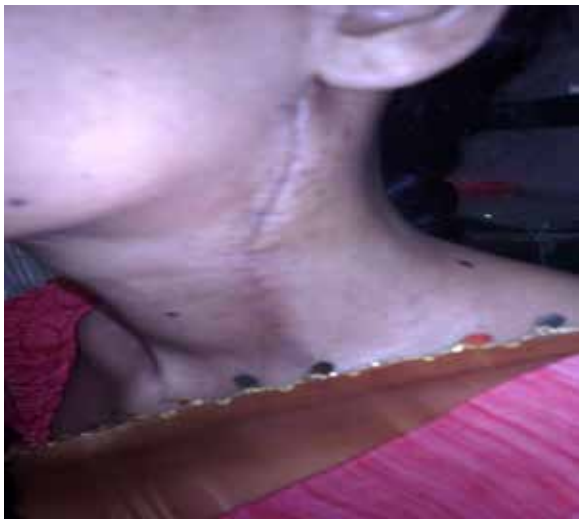

Figure 3 POSTOPERATIVE SCAR

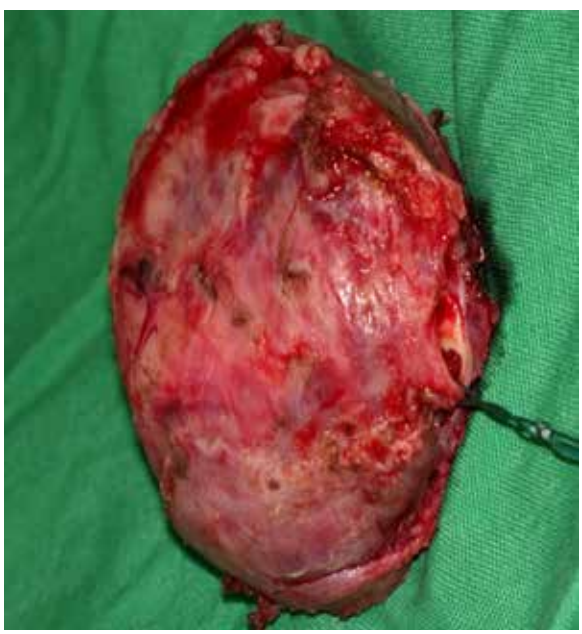

Figure 4 EXCISED CAROTID BODY TUMOUR

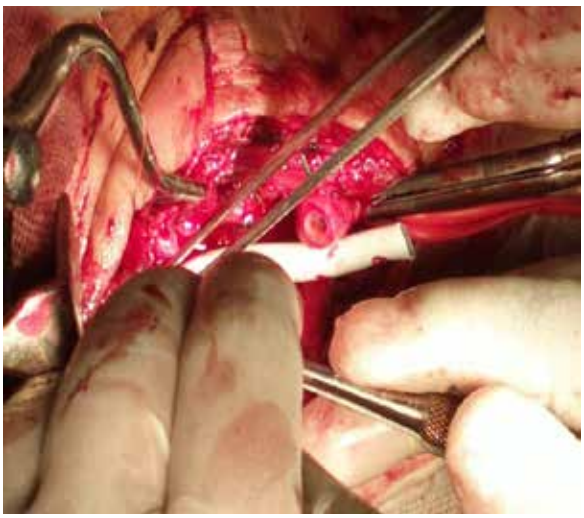

Figure 5 PROXIMAL ANASTOMSIS INTERNAL CAROTID ARTERY TO PTFE GRAFT

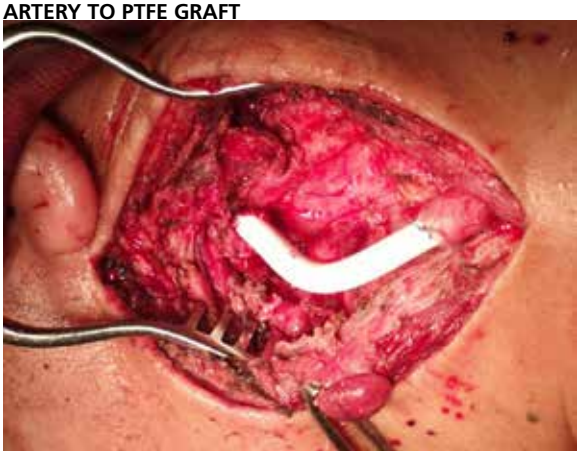

Figure 6 COMPLETED INTERPOSITION GRAFTING OF INTERNAL CAROTID ARTERY WITH 8 MM PTFE GRAFT

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