Carotid body tumour – A case report

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Summary

A case of carotid body tumour is presented. Pathology, diagnostic investigations, modalities of treatment and prognosis are discussed. With greater awareness of this condition and improvement in diagnostic investigations and surgical techniques, the outlook in managing this condition should be better.

Key words: Carotid body paraganglioma

Introduction

Carotid body tumours are rare. These tumours arise from carotid bodies which are chemo-receptors situated at the carotid bifurcation. The tumour is closely adherent to the carotid vessels and removal without damage to this vital structure poses a challenge when surgery is contemplated.

Case history

A 47 year old Chinese male was presented to our clinic in May 1988 complaining of a slow growing left neck lump of one and a half years duration. He was otherwise well. On examination, there was a firm mass deep to the upper third of the left sternomastoid muscle measuring 4x4cm, mobile from side to side but not vertically. It was non pulsatile and there was no bruit. All the cranial nerves were normal. Twenty four hours urine for vinyl mandalic acid was also normal. A carotid angiogram demonstrated a vascular tumour splaying the left external and internal carotid vessels (Fig. 1). A computerised tomogram showed an enhancing mass at the left carotid bifurcation displacing the internal carotid and jugular vessels posterolaterally and the external carotid and sternomastoid muscle anteriorly. These findings are consistent with a carotid body tumour.

In June 1988 he underwent surgery for excision of the tumour. A firm, well encapsulated mass was found at the left carotid bifurcation and although adherent to the vessels there was a plane of separation between them. There were no large feeder vessels. The tumour could be dissected free from the carotid bifurcation by meticulous subadvetitious dissection without damage

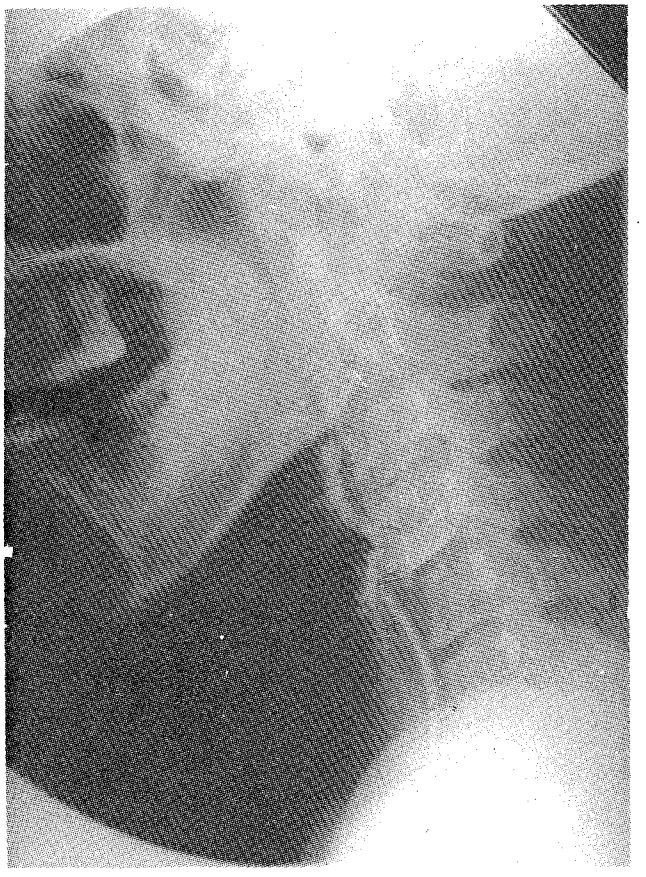

Fig. 1 **Left carotid angiogram showing the characteristic splaying of the internal and external carotid arteries.**

to the carotid vessels or cranial nerves. He made an uneventful recovery. Histologically the tumour was capsulated, well circumcribed, composing of cell nests or *zellballen* of rounded regular cells with centrally located nuclei and cytoplasm containing eosinophilic granules (Fig. 2). This picture is consistent with a carotid body paraganglioma. At the last follow up, three months after surgery, the patient remained well.

Discussion

Carotid body paragangliomas are tumours of nerve tissue origin arising from the carotid body. They are capsulated and contain clusters of parenchymal cells storing catecholamines (monoamine oxidase, norepinephrine and cholinesterase). There is usually no systemic manifestation of excessive catecholamine.[2] In the above case, the 24 hours urine for vinyl mandelic acid (VMA) done both pre and post operatively were normal. The incidence of malignancy is between 5–10%.[1] The most important investigation is carotid angiography. It will show characteristic splaying of the internal and external carotid arteries and a circumscribed vascular blush at the bifurcation (Fig. 1). A contralateral carotid angiogram is useful as there may be bilateral tumours in 5–10%.[2]

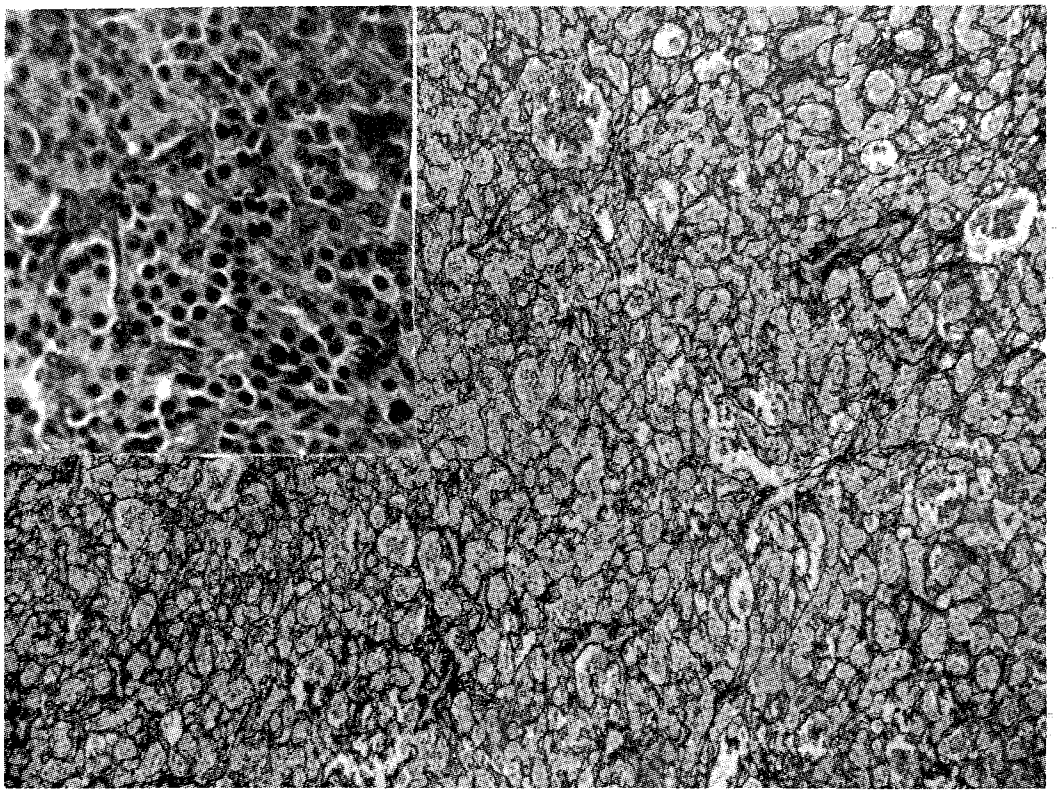

Fig. 2 **Low power view of the carotid body paraganglioma illustrating nestlike or *zenballen* pattern. Insert is the high power view of the nests composing of rounded regular cells with centrally placed nuclei.**

Surgical excision is the treatment of choice of many authors.[2] This is especially so if the patient is below 50 years, their tumour is enlarging progressively (as in the above) and causing pressure symptoms. The classic operation of meticulous subadvetitious dissection of the tumour from the arterial wall, as advocated by most surgeons was performed in this case.

There have been different opinions in the role of radiotherapy. Majority however feel that it is ineffective as a cure.[2]

When surgery incurs great medical risks and the rate of growth of the tumour is slow, there is a place for close observation. Dickinson[2] in his series of 37 patients, had seven of them on close follow up who were not troubled by their disease.

The estimated mortality rate for untreated carotid body tumours is about 8% while incomplete excision will result in local recurrence in about 12% of patients, one to twelve years following operation.[1]

In managing a patient with a carotid body tumour, complete head and neck examination with careful search for paragangliomas in other sites is necessary. Although surgery is the treatment of choice in majority of cases, various factors like age, symptoms, size of tumour, rate of growth,

natural history of the tumour and potential operative complications must be considered before the final decision is made. Carotid body tumours will continue to be a challenge, but with improvements in diagnosis and surgical techniques, the morbidity and mortality rates in managing these tumours should continue to improve.

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