

CAROTID BODY TUMORS

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ABSTRACT In this study ten cases of preoperatively suspected carotid body tumor have been presented, all of whom were operated in our clinic between 1977 and 1984. Of ten cases six were postoperatively diagnosed as non-cromaffin paraganglioma. Angiography was diagnostic in three patients. xOnly one hypoglossal paralysis was detected as complication.

Chemodectomas are the rare tumors of body. They are placed on carotid bifurcation, jugulary ganglia, vagus body, paratracheal nerve, ciliary ganglia, in mediastinum and lungs. The most common type of chemodectomas develops on carotid body. Chemodectomas are also called as paraganglioma, cromaffinoma, perithelioma, and carotid body tumors. The most correct term is non-cromaffin paraganglioma (1,4). Some chemodectomas release epinephrine, norepinephrine and serotonin-like hormones. However, Grabowski claimed that, they were not similar to the adrenal medullary tumors (7). Lahey reported that, carotid body tumor was first described and excised by Riegenger in 1880 (13). The tumors are most commonly benign. Carotid arteriography is important in diagnosis. Oculoplethismography (15), ultrasound (5), xxxx technetium-99 scanning (17) may also be useful. Biopsy is contraindicated because of the risk of bleeding and pseudoaneurism.

MATERIAL AND METHOD

In this study ten cases (eight females) of preoperatively diagnosed as carotid body tumor have been presented, all of whom were operated in our clinic between

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1977 and 1984. Ages ranged from 17 to 55. Of ten cases, six were postoperatively diagnosed as non-cromaffin paraganglioma, being five carotid body tumors and one glomus jugulare tumor. One of the other cases was neurilemmoma, two non-specific adenitis, and one tbc. adenitis. (Table 1 and 2). Three interesting ones were presented.

Table 1: Histopathological Diagnosis

Non-crom. Parganglioma	6 (five carotid body, one g. jug. tum)
Neurilemmoma	1
Non-spesific adenitis	2
Tbc. adenitis	1
Total	10

Table 2: Chemodectomas

Case	Year	Age	Size of tum.	Arteriogr.	Complicat	Mort.
1	1977	38	4x5cm	Car. art. narr.	—	—
2	1981	50	8x10cm	" " narrowed	—	—
3	1983	30	4x3cm	No narrowing	Hypogl.	paral.
4	1983	17	3x3cm	" "	—	—
5	1984	55	5x5cm	" " narrowed	—	—
6 Gl.j.	1984	43	4x8cm	No narrowing	—	—

Case 1: 38 aged woman had a submandibular, 4x5 cm, pulsatile, and horizontally mobile mass. Carotid angiography revealed narrowing of internal carotid artery (Fig. 1). The tumor was removed totally. Histopathological diagnosis was non-cromaffin paraganglioma. Two years later the patient had a mass 2x2 cm in the same locus. It was considered as malignant recurrence. Operation was advised, but the patient did not accept it. The patient has been keeping under control for seven years. The mass has not enlarged anymore. So no recurrence was confirmed.

Case 2: A 50 years of age housewife. She had a right submandibular mass for two years. The tumor was 8x10 cm in size, neither thrill nor murmur could be detected. Angiography was tried, because of the enlargement of the tumor it could not be achieved. Right anterior sternomastoid incision was carried out. It was impossible to remove the tumor by performing an arterial shunt. Peroperative arteriogram was made and it was shown that internal carotid artery was patent but narrowed. The operation was postponed. It was explained to the patient that the total removal might have some risks and neurological complications. The patient accepted the operation. Two days later, the tumor was resected



Fig 1

totally with common, internal and external carotid arteries (Fig. 2). 2000 ml of bleeding occurred. During postoperative period no complication developed and no neurological deficit. Within three year follow-up, neither complication nor recurrence were detected.

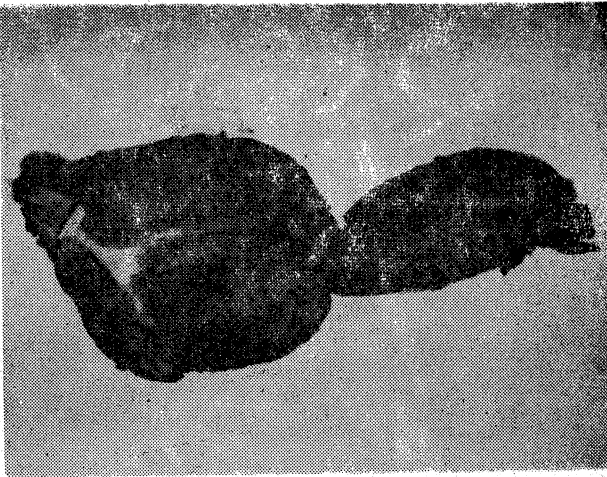


Fig 2

Case 3: A 30 aged female. Right submandibular mass which was present for 12 years was 4x3 cm in size and was enlarged more and more for the last two years. The tumor was pulsatile and the arteriogram showed that carotid arteries were patent and there was not an aneurismal dilatation. The tumor was totally

excised. But the right external jugular vein and hypoglossal nerve were also divided due to invasion. The diagnosis was carotid body tumor. Right sided glossal paralysis and partial atrophy occurred.

DISCUSSION

The treatment of carotid body tumors had been discussed for many years. Their growth are very slow and metastasis is very rare. Some of the surgeons prefer conservative treatment, but the others the operation. Due to the pressure symptoms and local invasions carotid angiography is of highly importance. In three of our five carotid body tumors the arteries were narrowed. Schick and asc. performed arterial embolisation and showed by arteriogram that, the size of tumors decreased 30 % by 90 % occlusion of the arteries (18). Some authors suggested preoperative embolisation (9,16,18) or radiation (12) in large and invasive carotid body tumors and for other chemodectomas.

In 1903, Scudder reported the successful resection of a carotid body tumor (19). The reasons of complications are the more vascular and invasive nature of the tumor. In some cases, since the dissection is impossible, carotid arteries are also resected with the tumor, then it results in paralysis and sometimes death. In a report, 4 of 7 patients whose carotid arteries were resected died and in another study 3 of 9 died, and in two patients paralysis developed (10). Cowley reported that, the mortality was 12% after carotid ligation and the paralysis (30 % (3). The resection of all three carotid arteries results in catastrophic stroke. In Padberg's study, abrupt obstruction of carotid arteries caused paralysis % 30 (%) and death (15). Arterial removal is obligatory if the tumor is more vascular and invasive. Gordon-Taylor described "White line" for easy dissecting the tumor from the artery (6). To prevent the complication intraarterial shunts and heparinisation were advised. Saphanous ven, dacron or tephlon grafts may be used when arterial resection is necessary (4,10,15). External carotid artery may be ligated if only this artery is invaded (4,15,21). In our study all three carotid arteries were partially resected with the tumor for only one case. Neither death nor neurological deficit occurred.

Just as in our case, so in Padberg's case ligation of all three carotid arteries not cause neurological deficit. Preoperative arteriogram of this patient revealed that the ligated carotid was filling retrogradly by the way of Willis's Poligone. (15). Chronic narrowing of internal carotid artery does not produce paralysis because the collateral circulation.

The malignancy of chemodectomas was reported in different manner. In a study of Mayo Clinic it was reported 50 % (8), in John Hopkins and Walter Reed series 5 % (2). Dent and asc. claimed that all the carotid body tumors were malign-

nant and they had tendency to make metastasis and invasion (4). In a follow-up of Memorial Cancer Center, malignancy rate were detected 9 % within 20 year period of 43 patients (12). In our study no malignant case could be detected.

Padberg reported, that, in postoperative period 5 hypoglossal nerves, 3 vagal, one facial nerve mandibular branch and one cervical sympathetic nerve deficit occurred (15). In one case of Grabowski's study facial and hypoglossal nerve paralysis were detected (7). Only one hypoglossal paralysis occurred in our study as postoperative complication.

Operation time and blood loss are similar to those in the literature. For Schick's patient the blood loss was 4.000 ml and operation time was 12 hours (18). In our cases mean blood loss was 1.500 ml. Padberg reported the mean blood loss as 2,1 units (15).

It is suggested that, there is a familial tendency for carotid body tumor (4, 11,20). But we could not find such a relation in our cases.

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