CAROTID BODY TUMOUR

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CAROTID bodies are usually described in association with the aortic bodies as they are seen to be of similar nature. The aortic bodies are not frequently described in connection with tumour formation whereas the carotid body receives greater attention because of its easy accessibility. MacComb has pointed out that the carotid body can be found only in about 25 per cent. of autopsy specimens. The carotid body, as also the aortic, is a non-chromaffin and non-epinephrine producing, and has no demonstrable internal secretion. The function is of a chemo-receptor and the nerve supply is predominantly sensory through the glossopharyngeal. The chemo-receptors in the carotid bodies respond to alterations in the CO_2 and O_2 tension of the circulating blood. Le Compte considers that under certain conditions they may be of major importance in the regulation of respiration.

The carotid body is a small ovoid or irregular mass of tough, pinkish tan, tissue measuring about 5 mm. in its greatest diameter. It is situated at the bifurcation of the common carotid artery, usually resting against the medial aspect of the vessel. The internal jugular vein is usually pushed towards the lateral side. Ellis has reported a case in which the internal jugular vein was replaced by several small vessels which entered and left the tumour in the shape of tributaries. Microscopically it is made up of nests or clusters of the "Chief Cells" which are fairly large and resemble epithelial cells which vary in shape from round to spindle, depending in part on how the tissue is processed. The fibrous stroma supporting the groups of cells is rich in capillaries. The structure is well brought out in the reticulum stain.

The pathology of the carotid body is limited to tumour formation. The tumours have been variously named as adenomas, peritheliomas, endotheliomas, hamartomas, paragangliomas and neuroblastomas. The most suitable term seems to be "the carotid body tumour". Similar tumours have been described in other regions and one which arises from the jugular bulb near the base of the skull known as glomus jugulare tumour or tympanic body tumour, has been thoroughly studied and reported in this journal (Capps-Munro Black).

Case Report

K.M., a male, aged 40 years, of average build, reported to the out-patient department of Sarojini Devi Hospital on *17.12.1958* with the following complaints:

1. Growing lump in the neck on the left side which was first noticed 5 years before.

2. Occasional cough with fever and chills (5 years duration).

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On Examination.

The lump, the size of a lemon, was situated high up in the neck on the left side, partly covered by the sternomastoid muscle. It was ovoid and one lobule could be palpated below. The consistency was firm and it was mobile, moving from side to side, with no pulsation and no bruit. The skin was not adherent and there were no signs of inflammation. A small lymph node was also palpable near the lower margin of the thyroid cartilage. Right side of the neck was normal.

Ear, nose and throat examination and palpation of abdomen, axillae and groins did not reveal any other abnormality.

X-ray of the chest, blood sedimentation rate and total and differential counts were all within normal limits.

A provisional diagnosis of T.B. adenitis was made and the patient was admitted for further investigations and treatment.

On *20.12.1958* under local anæsthesia, biopsy was attempted. A transverse incision was made over the lump and the subcutaneous tissue separated. During the dissection the tumour wall was torn and profuse bleeding started which was impossible to control by pressure. At this stage it was realized that the lump in question was a carotid body tumour. To avoid further loss of blood a vertical incision was taken below the centre of the previous incision and the common carotid artery was identified and ligated. Even after this the bleeding still continued and the various bleeding points were caught with artery forceps and further attempts to dissect and ligate the vessels was abandoned as even the slight trauma produced by the ligature was enough to start fresh bleeding.

On *27.12.1958*, under general anæsthesia, blood transfusion was first started and the wound re-explored. An attempt was again made to ligate the bleeding points and to remove the artery forceps. But again it was impossible to control the bleeding. As a last resort the incision was further extended upwards, internal and external carotid arteries were identified, ligated and the tumour completely removed. The internal jugular vein was seen closely adherent to the tumour on its lateral aspect. This was also ligated at the lower and upper parts of the tumour and removed *en masse*. Vagus, hypoglossal and laryngeal nerves were not involved. Two small lymph nodes which were present along the internal jugular vein were also removed and the wound closed.

Patient developed right-sided hemiplegia and speech was also affected.

On the following day he was seen by our Medical Specialist, whose active co-operation prevented the various complications which usually result in a hemiplegic. The patient is progressing well and it is hoped that there will be minimal residual symptoms due to this temporary hemiplegia.

Naked Eye Examination

Figs. 1, 2, and 3. A globular tumour measuring 4 by $4\frac{1}{2}$ cm. with a central vessel of 0·8 cm. diameter at one pole. Surface is rough and granular and the weight 56 g. On cutting, the feel is soft but firm. It shows brownish and white areas. The tumour is well capsulated. The large vessel seems to bifurcate and enter the tumour mass on either side. No cystic degeneration is noted.

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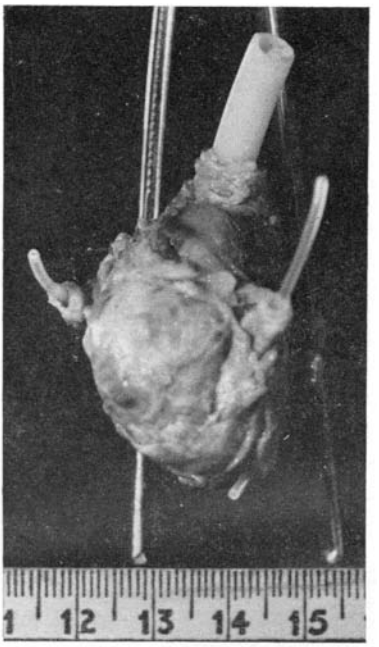


FIG. 1.

Photograph of the tumour showing the common carotid artery (wide polythene tube inserted) entering the tumour. The narrow polythene tubes are inserted into the external and internal carotid arteries.

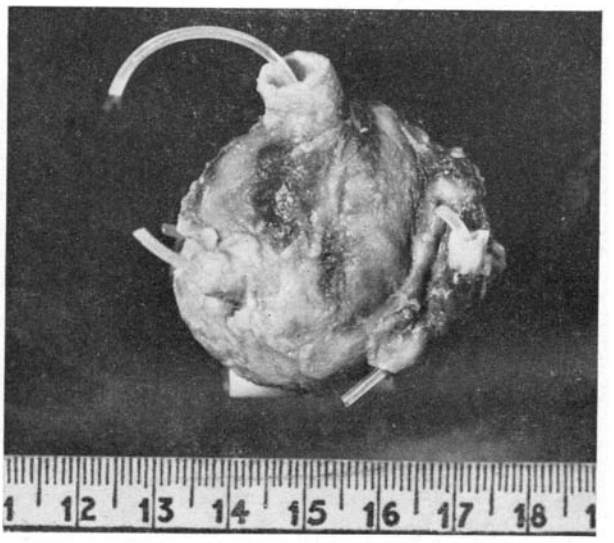


FIG. 2.

Photograph showing superficial and medial aspect of the tumour. An unidentified vessel which was adherent to the tumour is clearly seen.

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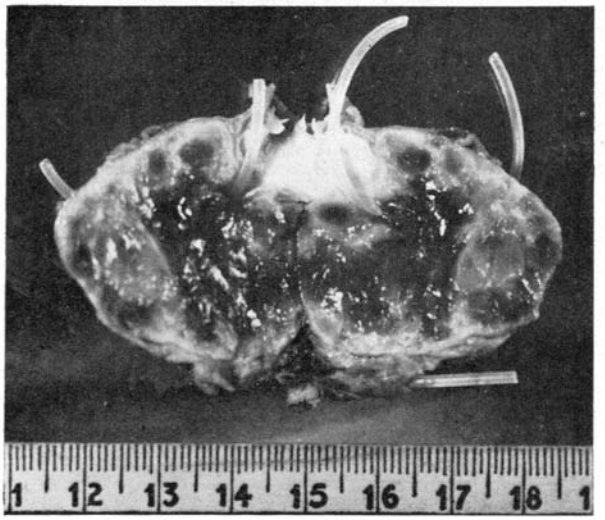


FIG. 3.

Photograph showing the cut sections of the tumour which clearly shows the common carotid artery splitting into the external and internal and entering the tumour mass on either side. The dark areas are of hæmorrhage and pigmentation.

Microscopic Examination

Figs. 4 and 5. This shows groups of large polyhedral epithelial cells fairly uniform in size and contain oval and round vesicular or hyperchromatic nuclei with fair amount of faint pink granular cytoplasm.

The groups of cells are surrounded by vascular stroma. Areas of necrosis and hæmorrhage are also seen. Scattered patches of brownish yellow granules of hæmosiderin are also present. Reticulum stain has brought out distinct capillary channels in the connecting tissues surrounding the groups of epithelial cells. Lymph nodes do not show any metastatic deposit.

Diagnosis.—Carotid body tumour.

Discussion

Carotid body tumour is an uncommon condition. Lahey stresses the following points in the management of these cases:

1. Although in most of the cases the tumour is confined to the carotid body of one side, the associated glomus jugularis tumour on the same or other side and the carotid body tumour on the other side have also been recorded. Hence a thorough clinical examination is essential.

2. In 75 per cent. of cases the tumour is asymptomatic and it is very slow growing.

3. 15 to 20 per cent. of these tumours are malignant.

4. Recurrence in cases of partial excision is estimated to be about 7 per cent.

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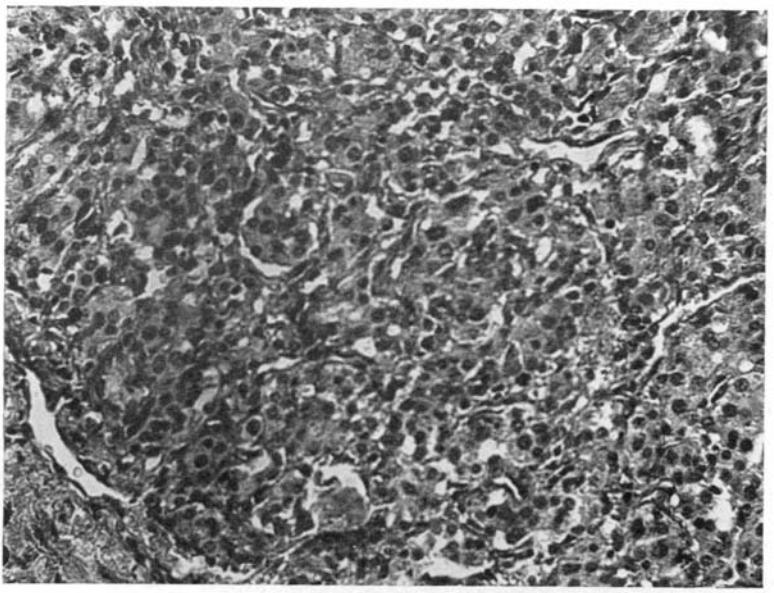


FIG. 4.

Section of tumour stained with Hæmatoxylin and Eosin showing groups of epithelial cells surrounded by vascular stroma. (× 190).

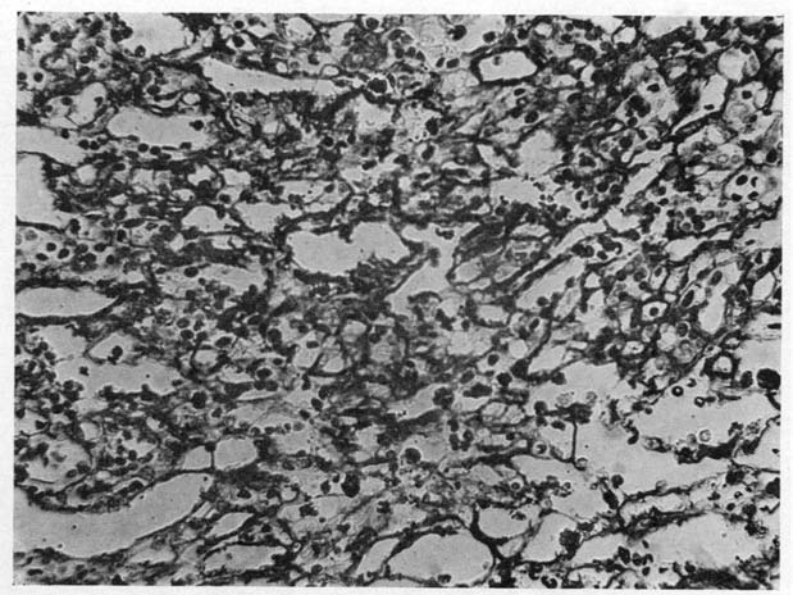


FIG. 5.

Section of tumour stained with Gomeri's Reticulum stain showing the distinct Capillary Channels (× 190).

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5. The effects of ligation of common, internal and external arteries must be kept in mind and it should be avoided, as the mortality rate is very high in these cases, being approximately 43 per cent.

Judging from these criteria, the debatable point which arises is whether we were justified in the excision of this tumour after triple ligation of the carotids which carry such a high mortality rate and which surely produces hemiplegia? Accidental injury to the tumour and inability to control the bleeding by any other means forced us to undertake this drastic step and after the excision the gap between internal and external carotids was not near enough to suture to each other, the open ends, of these vessels.

Acknowledgements

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