METASTASES IN THE ORBIT*

BY

E. J. ARNOTT AND D. P. GREAVES

University College Hospital, London

METASTATIC orbital tumours are relatively rare. This may be, as Giri (1939) has suggested, because of the difficulty encountered by blood-borne emboli in entering the right-angle bend from the internal carotid artery to the ophthalmic artery. The registry of Ophthalmic Pathology of the Armed Forces Institute of America included about 4,000 melanomata in 1958, but there were only 133 metastatic carcinomata involving the eyeball or its adnexa, and only fourteen of these occurred in the orbit. Of these fourteen cases, five were secondary to carcinoma of the breast and five to bronchogenic carcinoma, and five were of unknown aetiology. Some 3 per cent. of orbital expansive swellings are metastatic in origin. In the male the usual site for the primary tumour is the lung, in the female it is the breast, and in children the commonest orbital metastasis is from a sympathicoblastoma of the suprarenal medulla or the retroperitoneal ganglia. Among other sites which have been reported as giving rise to metastases in the orbit are the uterus, stomach, liver, kidney (hypernephroma), thyroid, prostate, and pancreas (Spaeth, 1961).

With orbital metastasis from carcinoma of the breast, the diagnosis of the primary tumour precedes the onset of ocular symptoms by an average of 3 to 5 years and it is exceptional for the ocular condition to arise before the primary has been discovered. Frequently, the site of involvement is in one of the orbital muscles and diplopia has long been recognized as an early symptom (Horner, 1864; Elschnig, 1898). Duke-Elder (1952) pointed out that diplopia with unilateral proptosis in the adult should arouse suspicion of a metastatic deposit. Bilateral metastatic involvement of the orbit has been noted by Magnus (1929) and Kreibitz (1931).

Case Report

A married woman aged 64 was first seen on May 24, 1963, with a history of epiphora and swelling of the right upper and lower eyelids for some 5 months, with diplopia particularly on looking down. The patient had been investigated at another hospital, where a diagnosis of myxoedema had been made, and treatment had been started with Tabs Thyroid gr. 1 three times daily. Some 2 months previously the left upper and lower eyelids had also become swollen. There was no other history of local or systemic disease apart from an attack of cholecystitis one year previously.

The visual acuity of the right eye had always been a little defective, and the patient had worn glasses for compound hypermetropic astigmatism since early adult life, but there was no history of strabismus.

Examination.—The visual acuity was 6/18, with + 3.5 D sph., + 0.75 D cyl., axis 100°, in the right eye, and 6/6, with + 2.25 D sph., + 1.25 D cyl., axis 180°, in the left.

There was a visible swelling of both upper eyelids, more marked on the right, which appeared tense and ptosed (Fig. 1, overleaf). The skin of the eyelids was normal. Hard irregular masses could

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be felt in the upper part of both orbits, and also in the lower part of the right orbit. The mass in the right orbit appeared to be subcutaneous in the area overlying the pulley of the superior oblique. There was also swelling and infiltration of the episcleral tissues on the outer part of the right globe. Exophthalmometry readings were 17 mm. right, and 15 mm. left, measuring from the apex of the cornea to the central point of the lateral orbital margin.

FIG. 1.—Front and side views, showing swellings in eyelids with some proptosis.

Apart from the slight proptosis of the right eye there was no sign of displacement of either globe. The right eye could be abducted 10 mm., but adduction was limited to 7 mm., elevation to 4 mm., and depression to 5 mm. (measured by the method of Kestenbaum, 1961). The ocular movements of the left eye were normal. The anterior and posterior segments of both eyes were normal, as were the ocular tension, the visual field, and the pupillary reflex. Clinical appearances suggested a provisional diagnosis of lymphoma.

General Examination—A small firm mass measuring $2.5 \times 2 \times 1$ cm. was found in the upper outer quadrant of the left breast. The overlying skin showed slight tethering; the mass was freely mobile over the deeper tissues. There were several discrete, rubbery, enlarged, non-tender lymph glands in the left axillary area.

There was a slightly impaired percussion note on the right side of the upper lobe, and diminished breath sounds in the right upper lung field, with voice sounds increased over the right upper lobe. The abdomen, cardiovascular system, and central nervous system were normal. There was no general lymphadenopathy. The blood pressure was 180/100 and the pulse rate 82. The patient was alert, pleasant, and co-operative, and her general condition was good. There had been no recent loss of weight.

Laboratory Investigations.—Haemoglobin 78 per cent., 11.5 g. per cent.; white blood cells 7,500; erythrocyte sedimentation rate 22 mm./1 hr.; plasma CO_2 capacity 26.5 mEq./l., chloride 106 mEq./l., sodium 139 mEq./l., potassium 3.6 mEq./l. Liver function tests were within normal limits. Plasma urea 22 mg./100 ml.

Chest x ray showed no signs of secondary deposits.

A barium meal indicated the presence of a moderate hiatus hernia with free gastro-oesophageal reflux. No abnormality was found in the stomach or duodenum.

Skull x ray revealed no abnormality.

Biopsy of Orbit.—An incision was made through the skin of the upper eyelid below and medial to the supra-orbital notch, as the orbital mass seemed to be most superficial in this area. It was found that the subcutaneous and deeper tissues had been infiltrated with a grey, rather avascular growth which, on being incised, had a grating quality rather like "cutting into an unripe pear". Two biopsy specimens were taken: one from the subcutaneous area and one from the orbit itself.

deep to the orbital septum. These showed trabeculae of polygonal cells infiltrating fibrous tissue and orbital fat suggesting a polygonal-cell metastatic carcinoma from breast or stomach (Fig. 2).

FIG. 2.—Histological section of tissue from orbit, showing secondary carcinoma from breast. Note marked increase in cellularity of secondary as compared with primary. $\times 90$.

FIG. 3.—Histological section of breast, showing scirrhus carcinoma. $\times 90$.

Treatment.—Although it was felt that the response to radiotherapy would be poor, a course of irradiation was given, using 140 kV. and an anterior field only, with a lead shield over the centre of the eye; field size 5 cm. circle. The dose rate was 300 r. per day twice daily, with a total skin dose of 3,100 r. in 22 days to the right eye, and 2,800 r. to the left eye. There was practically no response to this treatment.

In view of the pathological report of the orbital biopsy sections, the lump in the left breast was excised, and histological examination showed it to be an infiltrating scirrhus lobular carcinoma of finely trabecular or more dissociated structure (Fig. 3).

Result.—The patient was discharged from hospital some two weeks after the excision of the mass in the left breast, and treated thereafter with stilboestrol.

Summary

A case is described which first presented with bilateral orbital metastases from a previously undiagnosed polygonal-celled carcinoma of the breast. No other secondary deposits were evident.

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