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CHOROIDAL SARCOMA WITH METASTASIS IN THE OPPOSITE ORBIT*

BY

SEYMOUR PHILPS

LONDON

THE history here recorded is that of a woman who, ten years after enucleation of one eye for choroidal sarcoma, developed an encapsulated metastasis in the opposite orbit.

HISTORY

In February, 1938, a lady, aged 59 years, attended the Royal Westminster Ophthalmic Hospital because the right eye had become red and painful. The sight had been failing for a year in this eye, and was only perception of light. She was found to have glaucoma secondary to a large choroidal sarcoma, and the eye was removed (see Fig. 1). Microscopic section confirmed the diagnosis (see Fig. 2).

At this time her left eye was normal, and its corrected vision 6/6. She continued to attend the hospital, but no recurrences arose, and she remained in normal health. Apart from the periodical replacement of her glass eye, nothing unusual happened for nine years.

April, 1947. The patient had an attack of iridocyclitis in the left eye which cleared up completely in one month.

May, 1948. It was found that, whereas the patient had worn a correction of -2.0 sph./ $+0.5$ cyl. at 90° with which she saw 6/6, her refraction had now changed, and she achieved normal vision with a $+0.5$ cyl. at 90° . While this drop of 2 dioptres of myopia was noted, there was nothing to account for it, and the patient had no complaint, being pleased that her vision had so improved.

October, 1948. The patient noticed that the left eye appeared to be coming forward, and reported to hospital. The proptosis was straight forward, and there was no limitation of movement. This proptosis was variable, and in the following month seemed less marked. X-rays of the orbit revealed no bony changes and the fundus and vision remained normal.

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December, 1948. The proptosis was rather more marked, and a dilated vein appeared in the conjunctiva at the outer canthus. Abduction was slightly limited, and by deep pressure between the globe and the outer bony wall of the orbit a vague resistance could be felt.

It was decided that the left orbit must be explored, and she was told to attend hospital the following week so that she might be admitted, the diagnosis being a tumour behind the left globe, possibly a metastasis.

FIG. 1.

Photograph of right eye excised in 1938, showing a large malignant melanoma of the choroid.

The day after this decision had been taken her doctor telephoned the hospital to say that she had been taken acutely ill with a sudden alarming proptosis of the left eye, the cornea of which was exposed so that the lids would hardly meet. She was admitted at once, the diagnosis being haemorrhage into a retro-ocular neoplasm, and the house surgeon performed an emergency tarsorrhaphy.

The swelling and congestion of the left eyelids and orbital tissues remained for three weeks, but, as no blood-staining of the eyelids occurred, the diagnosis of haemorrhage into the orbit seemed less probable, though it was still felt that the bleeding might have occurred into an encapsulated tumour.

January, 1949. Three weeks after admission a left lateral orbital exploration was carried out (Kronlein's exposure), and an encapsulated tumour was found lying within the muscle cone and attached to the under side of the external rectus muscle. After reflexion of this muscle the tumour came away quite easily except at the apex of the orbit, to which it was attached by fibrous tissue which had to be divided. The capsule was accidentally punctured at one stage in the removal with escape of necrotic material, so that a dermoid cyst seemed the most likely diagnosis at this stage. For photograph of tumour see Fig. 3. The position of the tumour is shown in Fig. 3A.

The patient made an uneventful recovery and left hospital nineteen days after operation. Fig. 4 shows the operation scar just before leaving hospital. At that

FIG. 2.

Photomicrograph of the malignant melanoma of the choroid (right eye), removed in 1938. Note the perivascular arrangement of the spindle cells—compare with Fig. 3. H and E. $\times 306$.

time the left vision with -1.0 sph. was 6/6 partly, but one month later she was a little more myopic, and it is interesting to note the return of her myopia when the pressure behind the eye was relieved. She has remained in good health and vision since that time, her vision at this date (June, 1949) being once more, with -2.0 sph., $+0.5$ cyl. at 90° , 6/6.

PATHOLOGY.—By Dr. Norman Ashton, Pathologist to the Moorfields, Westminster and Central Eye Hospitals.

Left Orbital Tumour. Pinkish-yellow, ovoid, soft, encapsulated tumour measuring 2.4 cms. $\times$ 1.25 cms. $\times$ 1.5 cms. (Fig. 3).

Sections. A series of sections taken from different parts of the tumour were stained with haematoxylin and eosin, Van Gieson's stain, Wilder's silver stain and Masson's trichrome stain. Frozen sections were stained with Sudan III. The

tumour is bounded externally by a dense fibrous capsule, containing voluntary muscle fibres, which merges insensibly with the cellular mass which forms the bulk of the tumour (Fig. 5). Centrally the lesion is completely necrotic, and between the zone of necrosis and the fibrous capsule there is a margin of large polyhedral vacuolated cells supported in a loose fibrous stroma infiltrated with lymphocytes (Fig. 6). In the frozen section stained with Sudan 111 these cells are seen to contain globules of fat. In the Masson-stained section the structure of the central necrotic area is clearly discernible, and is seen to consist of masses of spindle cells, which are aggregated as a mantle around the thin-walled blood-vessels, with their long axes arranged radially (Fig. 7). Silver staining shows dense pericellular reticulin formation around the large peripheral cells (Fig. 8), but only a few filaments remain within the necrotic area. A small quantity of intra- and extra-

FIG. 3.

cellular pigment is present in the living cell layer. The appearances in the necrotic zone are typical of a malignant melanoma of the choroid, and a comparison with the histology of the tumour of the right eye removed 11 years previously (Fig. 2) leaves little doubt that the orbital tumour is in fact a metastasis from the original growth. The border of large fat-containing cells might be regarded as an inflammatory reaction to the central necrotic mass, but it appears more probable, from a study of the margin of the living and dead-tissue, that the whole lesion was originally composed of the same type of cell. In 1912 Ginsberg described three cases in which lipid degeneration was found in melanotic growths of the choroid: fat was deposited within the cytoplasm of the spindle cells, so distorting and distending them as to form large "foam cells" which, judging from his illustrations, are identical with those in this case. In my view, therefore, this tumour is an encapsulated malignant melanomatous metastasis arising from a primary in the choroid of the right eye and undergoing central necrosis and peripheral lipid degeneration.

FIG. 3a.

Site of growth within the muscle cone of the L. orbit.

FIG. 4.

FIG. 5.

Photomicrograph of orbital tumour. From left to right can be seen the fibrous capsule containing muscle fibres, the zone of large fat-containing cells and the central necrotic mass of spindle cells. Masson stain $\times 130$

FIG. 6.

Photomicrograph showing the junction of the necrotic tissue below with the margin of large fat-containing cells above. Masson stain. $\times 410$.

FIG. 7.

Photomicrograph of the central necrotic area showing spindle cells arranged radially around the blood vessels. Compare with the photomicrograph of the original tumour (Fig. 5). Masson stain. $\times 410$.

FIG. 8.

Photomicrograph showing pericellular reticulin formation around the large peripheral cells. Wilder's silver stain. $\times 410$.

Conclusions

No instance has been discovered in the literature of a history such as is recorded here, of a woman surviving a large choroidal sarcoma for 10 years, then developing a metastasis in the opposite orbit, which being encapsulated could be completely removed leaving normal vision.

I am grateful to Dr. Norman Ashton for all the trouble he has taken over this tumour, and also to Dr. Hansell of the Medical Illustration Department of the Institute of Ophthalmology for his fine photographs.

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HISTO-PATHOLOGICAL STUDIES OF THE BLOOD-VESSELS OF THE EYE*

BY

R. SYSI

HELSINKI

THERE are numerous publications in the literature dealing with arteriosclerotic vascular changes in the eye. Most of them are based on a comparatively small material, which explains the diverging opinions on many points. Thus Koyanagi, Friedenwald and lastly Bergstrand consistently noted more conspicuous changes in choroidal vessels than in those of the retina, while Rintelen observed marked vascular changes in the retina only in few cases. He rarely found any considerable changes in the a. ciliares posteriores, while the others found pronounced sclerosis therein. Rintelen denies the existence of any severe sclerosis in the blood-vessels of the iris and the corpus ciliare, in contrast to Gasteiger and, more recently, Rones, who found great changes in these vessels. There are also differences of opinion as to whether the sclerotic changes spread as far as the anterior parts of the choroid and the retina, or whether they occur only nearer to the posterior pole of the eye. These examples will suffice to show that further studies on vascular changes in the eye are not out of place.

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From the Patho-Anatomical Institute, University of Helsinki.
Chief: Professor Arno Saxen, M.D.