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I.—GLIOMA OF THE RETINA, WITH NUMEROUS METASTASES.
II.—SARCOMA OF THE CHOROID.
III.—SARCOMA OF THE CHOROID.

PHILADELPHIA:
J. B. LIPPINCOTT & CO.
1874.

THREE CASES OF INTRAOCULAR TUMOR.

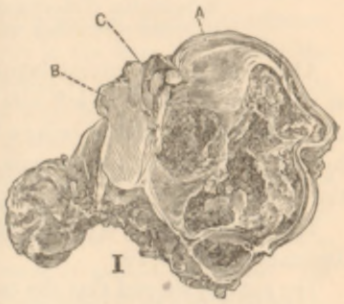
READ BEFORE THE PATHOLOGICAL SOCIETY OF PHILADELPHIA, JANUARY 9, 1873.

I. *Glioma of the retina, with numerous metastases.*

B. N—, aged 2½ years, was brought by his parents to the clinic of the University of Pennsylvania in October, 1870, with the statement that in the winter previous they had noticed a yellowish reflex from the right pupil. The right eye was slightly prominent, lid a little swollen but not reddened, the eyeball very tense (T_2), commencing opacities in the cornea, a small quantity of pus in the anterior chamber, the lens yellowish and so far opaque that nothing could be seen behind it.

The case having been recognized as one of glioma, enucleation of the eyeball was performed October 20th, 1870. The wound healed rapidly, and in ten days the child returned to his home.

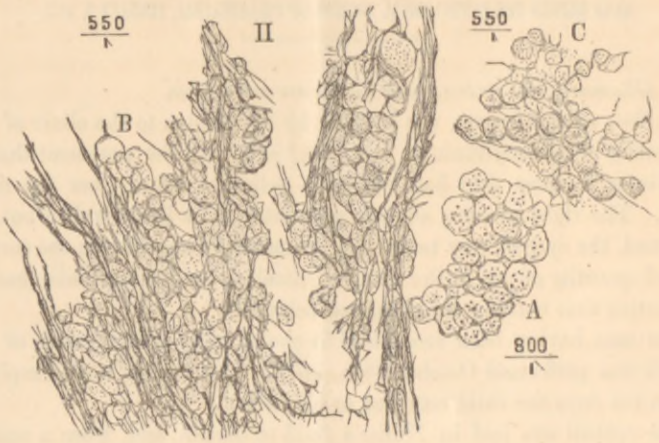
The eyeball was laid in Müller's fluid to harden, and, when a section was made of it, a tumor was seen filling the posterior half of the ball, the anterior portion being filled with pus. To the outer upper side of the ball was a tumor firmly adhering to the sclera, shaped as if moulded to it, about one-half inch in length by one-fourth of an inch in thickness; and from this another nodule, about the size of a hazel-nut (⅝″ in diameter), projected still farther into the orbital tissues. The continuity of the sclerotica between the external and internal tumor was unbroken, it having been infiltrated by the tumor but not ruptured by it. A microscopic section of it showed the characteristic structure of glioma,—viz., numerous small round cells, imbedded in a finely granular material, each cell being about the size of the granules of the granular layers of the retina.



A. Intraocular tumor.
B. Episcleral growth.
C. Optic nerve.

The child soon returned to the clinic with a button of granulations

springing from the bottom of the conjunctival sac. This rapidly increased in size, and, having filled the orbit, projected from the eyelids as a flattened round mass nearly three inches in diameter. Sloughs now formed on the exterior surface of the mass, which separated and fell off, materially reducing its size and allowing the distended eyelids once more to close over it. It, however, soon repullulated.



A. Cells from intraocular tumor.
B. Infiltration of the sclerotic.
C. Section of secondary tumor between dura mater and skull.

About this period several lumps appeared on the child's head, and one at the angle of the jaw (left side). Two of these attained considerable size; one near the vertex being a flattened hemisphere about three inches by two in diameter, and the one at the angle of the jaw ulcerating into the cavity of the mouth and causing a constant fetid discharge.

The child, at first very irritable, became heavy and soporose, and died December 14th, 1870.

The autopsy showed that the tumors on the outside of the cranium had sprung apparently from the periosteum, leaving, when forcibly pulled off, the bones bare and rough. On removing the calvarium, numerous flattened ovoid lumps were found between the dura mater and the bone, that membrane firmly adhering to them. Some of these were as large as half a walnut. Opposite them were corresponding depressions in the cerebral convolutions. The brain-substance at these points presented no trace of the gliomatous degeneration.

It was also seen that the tumor filling the right orbit had extended

backwards through the sphenoidal fissure into the cranium, and, crossing over through the sella turcica, extended to the vicinity of the sphenoidal fissure of the left side.

The case is interesting clinically from its extreme malignancy, and the inefficiency of the operation undertaken at a period when the tumor has filled the ball and caused inflammation and greatly increased intra-ocular pressure, to arrest even temporarily the progress of the disease. Scleral tumors, if small and formed at the posterior surface of the ball, are not to be diagnosticated before enucleation. Having found them, according to many authorities it is proper to destroy by cauterization the entire contents of the orbit; but the statistics of this procedure were not sufficiently encouraging to cause a decision in favor of so serious an operation.

The prognosis of all such tumors is eminently unfavorable, and the recorded cases in which the return has not been rapid are all instances in which the extirpation was undertaken early. In the foregoing example the yellow reflex from the eyeground had been observed by the parents for nearly a year before they considered it worth while to submit the child to medical examination.

The statistics of the subject have been carefully compiled by Hirschberg.* Out of seventy-seven cases he gives five cures (*i.e.* 6.5 per cent.). One of these was observed seven years after the operation, one six, and in the other three from one to one and a quarter years had passed without a return of the disease. They were all operated on in the earliest stage of the disease.

I have reported the above history partly in the hope of inducing the members of the Society to use their influence to cause all such cases, as soon as observed, to be carefully examined with the ophthalmoscope, and, if the presence of an intraocular tumor be proved by it, to urge instant extirpation. Moreover, they will contribute essentially to the statistics of the subject if they will report the return or metastases of any such cases as fall under their notice. For here, if ever, we have a chance to prove the value of the knife in the treatment of malignant disease. By the ophthalmoscope the disease may be diagnosticated in its very incipiency; and while the abnormal mass measures only a millimetre or two in diameter, and while it is yet shut off from the rest of the organism by the firm fibrous capsule of the sclerotica, we have surely better means of deciding the question whether malignant disease can be eradicated by the knife, and, if not, whether life can be prolonged by the operation, than is presented to us in any other organ of the body.

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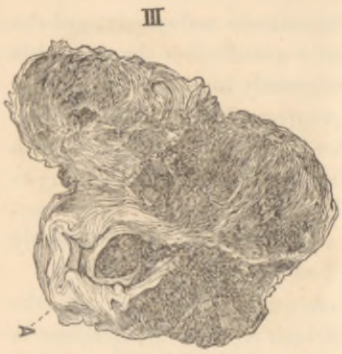
* Der Markschwamm der Netzhaut, Berlin, 1869.

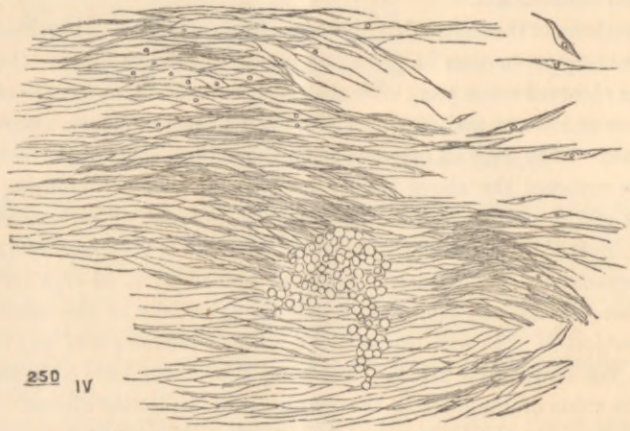
II. *Sarcoma of the choroid.*

E. O'C—, aged 60 years, presented herself at the clinic of the University of Pennsylvania, April 1st, 1872, with a tumor of the right eye the size of a small hen's-egg. It was everywhere covered by conjunctiva, hard and nodulated. Some years previously an operation for staphyloma had been performed on the eye, and a section of the growth proved that it had its origin in the cicatrix of the shrunken ball.



Equatorial section of shrunken ball and of the tumor.

Microscopic examination showed a net-work of very small spindle cells closely felted together, and consequently a comparatively favorable prognosis was made. It was enucleated April 4th, 1872, and up to the present date there has been no recurrence.*



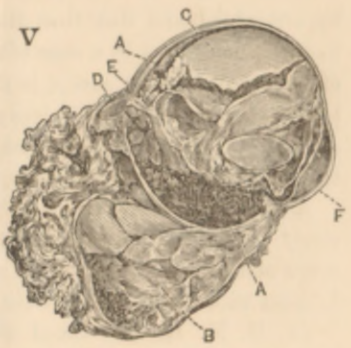
Section of above, magnified two hundred and fifty diameters.

III. *Sarcoma of the choroid.*

J. H—, aged 25 years, a healthy-looking farmer, presented himself at the Wills Hospital with a hard lobulated tumor growing from the right eye and pushing the cornea upwards and outwards. The lids can still be closed over it; but it has grown much lately, and causes severe hemicrania.

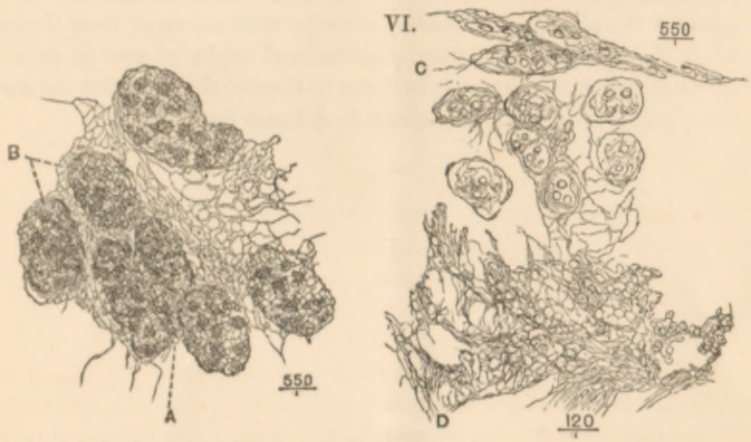
* Patient now, March 20th, 1874, in good health, and no symptom of recurrence.

The ball and adherent tumor were removed May 5th, 1872. A section of the ball showed the inner wall of it occupied by a *pigmented* tumor, which presented a mottled appearance, owing to some portions of it being less pigmented than others, while some were entirely uncolored. The retina, adherent to the tumor on that side, although pushed inward by it, was on the other side entirely detached from the choroid and separated from it by a mass of pus. The sclera was nowhere ruptured, but outside of it, opposite the choroidal tumor, was an unpigmented hemispherical mass about three-fourths of an inch in its longest diameter. Micro-examination showed that the choroid tumor was a mixed form of sarcoma, consisting partly of round and ovoid, and partly of spindle-shaped cells.



A. Pigmented tumor.
B. Episcleral growth.
C. Subretinal pus.
D. Optic nerve.
E. Retina.
F. Lens dislocated by the section.

In some places these were pigmented, in others entirely free from it. Most of the cells had more than one nucleus, and many of the large ovoid pigmented cells contained as many as six or eight. An examination of the



A. Large polynucleated pigmented cells from intraocular tumor.
B. Other large cells lying in a slightly deeper layer, the nuclei hidden by the numerous superficial pigment granules.
C. Round and spindle cells from the orbital growth.
D. Stroma of orbital growth as seen under a lower power.

episcleral growth and its edges showed that the fat-tissue of the orbit had been irritated by the presence of the neighboring tumor; that the trabeculæ of fibrous tissue pervading it and bounding its areolæ had been hypertrophied, and that then the place occupied usually by the fat-cells had been infiltrated by a mass of spindle and round cells, resembling those of the original tumor, except in their not being pigmented. This anatomical arrangement, of course, gives a marked areolar appearance to the tumor. In this orbital growth the round and ovoid cells constituted the bulk of the tumor, the spindle cells being far less numerous.

A most unfavorable prognosis was made, which has been only too accurately verified by the course of the case. Within a few days (*i.e.* about seven months after the removal of the tumor) he has reappeared at the hospital with a recurrence of the growth *in situ*.

Dr. R. M. Bertolet asked whether, in pigmented sarcomata of the choroid, the metastases were also pigmented.

Dr. Norris replied that even with regard to sarcomata of the choroid, although the greater number were pigmented, certain tumors occurred which, notwithstanding the marked pigmentation of the mother-tissue, were entirely composed of white cells. These are, however, rare. Dr. N. said that metastases were most frequent in the lungs and liver, and that some were pigmented and some not. This circumstance, he said, was claimed by the advocates of each of the two theories as supporting their own view. Those who believe in the metastasis of cells themselves consider the pigmented secondary deposits vindications of their theory; while those who believe in the constitutional origin of morbid growths affirm that their occurrence is evidence in favor of the view that the same cause produces the same effects even in different localities.