

Notes on glioma retinae : with a report of 60 cases / by J. B. Lawford and E. Treacher Collins.

Contributors

Lawford, J. B., active 1886.
Collins, E. Treacher 1862-1937.
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NOTES ON GLIOMA RETINÆ,
WITH A REPORT OF SIXTY CASES.

NOTES ON GLIOMA RETINÆ, WITH A REPORT OF 60 CASES.

By J. B. LAWFORD,
Assistant Surgeon to the Hospital; and

E. TREACHER COLLINS,
Curator of the Museum.

THE enquiry, the results of which are embodied in this report, was undertaken chiefly for the purpose of ascertaining, whenever possible, the after-history of cases of glioma of the retina. In this we have been only partially successful, the migratory habits of that class from which the majority of hospital patients are derived, leading to the frequent failure of any attempt to trace the patients or their relatives, for more than a few months after they left the hospital.

We append a tabular statement of the cases. Of the total number (60 patients, 66 eyes), 55 were cases in the Hospital during the years 1871 to 1890. For notes of four of the other five cases we are indebted to Messrs. Marcus Gunn, Stanford Morton, and Jessop (London), and Mr. J. Elliott Square (Plymouth). The remaining case was under the care of one of the writers.

Several of the earlier cases have been already reported by Nettleship and Brailey in the *Ophthalmic Hospital Reports*; we have included them in our list because in some instances the further history of the patient has been obtained, and because they add to the statistical value of our paper.

Reference to the tables will show the points upon which we have endeavoured to gain information, but many of the cases are necessarily incomplete. The following summary of remarks upon the cases may prove of some interest. We have carefully searched the literature

of the subject in reference to several questions of importance, and the information thus obtained is embodied in our remarks, and the results compared with our own. We may here state that we have made every effort to exclude cases in which there appeared to be reasonable doubt that the diagnosis of glioma was correct; such were cases in which no microscopic examination of the growth had been recorded, or in which the reports were too scanty to be reliable.

Sex.—Of the 60 cases, 30 were males, 27 females, and in 3 the sex was not given. These figures show a slight preponderance of males. In previously published tables the numbers were: Hirschberg, 77 cases, 37 males, 24 females, 16 undetermined; Vetsch, 22 cases, equally divided between the sexes; Lukowicz, 27 cases, 11 males, 15 females, 1 undetermined; Knapp, 7 cases, 6 males, 1 female. Adding these figures, we get, of 193 cases, 95 males, 78 females, and 20 undetermined.

Eye affected.—Of our 60 cases, the growth occurred simultaneously, or with short interval, in both eyes in 12 (Nos. 6, 9, 10, 19, 21, 26, 34, 35, 36, 46, 55, 60); in 4 others (Nos. 8, 17, 20, 51) there is decided probability that the disease attacked both eyes; and in one (No. 58) the affection of the second eye may have been glioma. Of those in which the disease was unilateral, the right eye was affected in 16 cases, the left in 27 cases, and in one it was not stated. Of 60 of Hirschberg's cases, in 14 both eyes were affected; in 25 the right, and in 21 the left, eye was the seat of the new growth.

Vetsch records 22 cases, in one of which the disease was bilateral; in 11 the right eye and in 10 the left eye was affected.

Age of Patients.—There is generally considerable difficulty in obtaining an accurate statement from the parents, as to the date at which attention was directed to the child's eye. The figures which are given in the tables can only be taken as approximately correct. Classifying

our cases roughly, we obtain the following results: the disease was first noticed by the parents:—

Within three months of birth, in 9 cases; of these it was noticed "at birth" in 5 cases, during the first five weeks of life in 2 cases.

Between 3 and 6 months, 4 cases.

„ 6 „ 12 „ 9 „

During 2nd year, 13 cases.

„ 3rd „ 7 „

„ 4th „ 3 „

„ 5th „ 4 „

„ 6th „ 4 „

„ 7th „ 1 „

Age uncertain 6 „

From these figures it appears that the growth begins, or more correctly becomes evident, with greatest frequency during the first two years of life. There is no doubt that glioma of the retina is, in some cases, present at birth.

Hirschberg out of 77 cases gives 6 as congenital.

Vetsch out of 22 cases gives 3 as congenital.

In our oldest case, disease was first noticed during the 7th year. Hirschberg reports 4 cases at an older age, viz., 1 at 9 years, 2 at 10 years, and 1 at 11 years.

Vetsch gives 1 at 8 years; Lukowicz gives 1 at 9 years of age.

Recoveries.—We have considered as permanent recoveries only those cases in which we have obtained reliable information that the patient was alive and well, and that no recurrence of the disease had occurred, *three years* after the removal of the eye or eyes. Our reason for fixing three years as a limit is that one case has been recorded by Vetsch, in which three years after the removal of the eye a secondary growth occurred in the parotid gland, which was decided by microscopic examination to be gliomatous. We must add, however, that this is a unique case, and that the usual interval between the

operation upon the primary and the appearance of the secondary growth is much shorter. In our tables the longest period of quiescence was nine months (Case 8). In view of this single case, it seems that a patient cannot be pronounced safe under three years from the date of operation.

Of our 60 cases, we find 8 which, according to this test, may be regarded as permanent recoveries. They are as follows:—

Case 1, 19 years.

„ 16, $11\frac{3}{4}$ „

„ 23, $14\frac{1}{2}$ „

„ 29, $5\frac{2}{3}$ „

„ 39, $4\frac{1}{2}$ „

„ 43, $3\frac{1}{2}$ „

„ 45, $3\frac{1}{12}$ „

„ 46, 3 „

Case 1.—Reported in Ophth. Hosp. Reports, vol. ix, p. 46.

We have recently examined this specimen, which is in the Hospital Museum, and are satisfied as to its nature.

We have also seen the patient within the last six months.

Case 16.—Reported in Ophth. Hosp. Reports, vol. x, p. 251.

We have examined the slides made at the time of excision, and have no doubt of the gliomatous character of the growth. The patient is known to be alive and well in New Zealand.

Case 23.—Reported in Ophth. Hosp. Reports, vol. viii, p. 545.

Patient alive and well (in Rome) February, 1890.

Case 29 (not reported).—The slides made at the time of

removal of the eye have been recently examined by us.

There is no doubt the tumour is glioma. Patient seen in February, 1890, in good health. Other eye normal.

Case 39.—Slides re-examined and growth determined to be

glioma. Child reported by parents alive and well.

Case 43.—Slides re-examined; certainly glioma. Child alive

and well in July, 1890.

Case 45.—Slides made three years ago re-examined, and dia-

gnosis confirmed. Child reported by father alive and well.

Case 46.—Slides re-examined. They show undoubted glioma.

Child reported by father alive in November, 1890.

Of the remaining 52 cases, 6 are known to be still alive, but none of these having reached the three-year limit they are not included in the above list. One (No. 55) is a case of double excision, and, up to the present time, $2\frac{1}{8}$ years have elapsed since the removal of the second eye. The other 5 are cases in which the disease was uniocular; in No. 50, 1 year and 5 months have elapsed since the eye was excised; in No. 56, 1 year and 10 months; in No. 57, 2 years and 4 months; in No. 59, 9 months; in No. 60, 9 months (the fellow eye is, however, affected in this case).

In the literature of the subject we have found records of altogether 25 cases of permanent recoveries, using this term in the sense defined above. They are briefly as follows :—

BRUDENELL CARTER. 1 case, 9 years.

HIRSCHBERG. 1 case, $12\frac{1}{2}$ years.

„ 1 „ $3\frac{1}{2}$ „

FOUCHARD. 1 case, $16\frac{1}{2}$ years. There was no microscopic examination of the specimen.

NELLESSEN. 1 case, $4\frac{1}{4}$ years. In this case a recurrent growth in the orbit was removed, and the contents of the orbit cleared out. The patient was alive and well $4\frac{1}{4}$ years after the second operation.

KNAPP. 1 case, 14 years.

„ 1 „ 6 „ after exenteration of orbit.

LANDSBERG. 1 case, 16 years.

„ 1 „ 3 „

AGNEW. 1 case of double enucleation, 14 years.

BRIÈRE. 1 case, 4 years.

LAWSON. 1 case, 8 years.

„ 1 „ 7 „

VETSCH. 1 case, 9 years.

„ 1 „ 7 „

THEOBALD. 1 case, $9\frac{1}{2}$ years. No microscopical examination.

SNELL. 1 case, 12 years.*

* Reported in Brit. Med. Jour., 1884, ii, 1194. Mr. Snell has informed us that the patient is now (August, 1890) alive and well.

NOYES. 1 case, $14\frac{1}{2}$ years.

MACFARLAND. 1 case, 5 years.

HODGES. 1 case, 9 years.*

LUKOWICZ. 1 case, $12\frac{1}{3}$ years.

„ 1 „ $8\frac{2}{3}$ „

„ 1 „ $6\frac{2}{3}$ „

„ 1 „ $6\frac{1}{2}$ „

„ 1 „ $5\frac{1}{4}$ „

Agnew's case is especially noteworthy. It and our No. 46 are, so far as we know, the only cases hitherto recorded in which permanent cure has resulted after double enucleation for glioma; No. 55, in our tables, also a double case, is alive at this date, but the time which has elapsed since the operation upon the second eye is only $2\frac{1}{8}$ years.

The percentage of permanent recoveries in the cases published by different authors varies considerably: thus Vetsch records 2 out of 25; Lukowicz, 5 out of 27; we have 8 out of 60.

Duration of Life after Operation in Fatal Cases.

Twenty-eight of our 60 cases are known to have terminated fatally. Of these six (Nos. 6, 10, 21, 26, 34, 35) were cases in which both eyes were certainly affected, and in four of them (Nos. 6, 26, 34, 35) double enucleation was performed (not simultaneously). The longest duration of life after removal of the second eye was eight months (No. 35). In five others (Nos. 8, 17, 20, 51, 58) both eyes were blind, but there is some doubt as to the nature of the disease in the second eye (see tables).

In the cases in which one eye only was affected the longest duration of life after its removal was 14 months (No. 2). In three of the fatal (unilateral) cases (Nos. 2, 38, 41) the growth had extended through the sclerotic coat. In 13 the optic nerve was invaded, and in the remainder it is

* Reported in the *Lancet*, 1879, two years after operation. Mr. Hodges has informed us that the patient was alive and well nine years after operation.

uncertain whether the tumour was or was not confined to the eyeball. In not one of the cases known to have ended fatally, with the possible exception of No. 40, was the growth entirely intraocular; in a considerable proportion of the total number, however, the after-history of the case could not be obtained.

Interval between Discovery of Growth and Operation in Fatal Cases and Cases of Recovery.

In the six cases which are known to have been permanently cured the average time which elapsed between the discovery of the growth and the removal of the eyeball was 4 months. In 16 fatal cases the average interval was 14 months.

Site of Recurrent Growth.

Of 22 cases the tumour recurred in the orbit in 17. In the remaining 5, secondary growths were met with in the cranial bones, the throat, palate, and in one case, in which a post-mortem examination was made, in the brain and spinal cord.

On the Possible Shrinking of Eyes containing Gliomatous Tumours.

In two of our cases (Nos. 36 and 58) in which both eyes were diseased, one eye shrank. In Case 36 the *left* eye, which was shrunken, was removed and examined microscopically. As will be seen on reference to the tables, the appearances were suggestive, but not conclusive, of glioma. Shortly after removal of this eye its fellow became affected, and the ophthalmoscopic appearances were thought to indicate glioma. Unfortunately the after-history of this patient could not be obtained.

In Case 58 the *left* eye was shrunken; it was not removed; the *right* eye undoubtedly was affected by glioma.

It was removed; the child died soon after with cerebral symptoms, and there was a growth on one parietal bone.

Three cases are already on record in which eyes believed to be affected by glioma underwent shrinking.

SNELL, Ophth. Soc. Trans., vol. iv, p. 49, reports one case, and in the same vol., p. 54, BRAILEY reports one case. BRAILEY, Ophth. Soc. Trans., vol. v, p. 61, reports a second case.

In Snell's case the shrunken eyeball was not examined microscopically. In Brailey's first case the report of the examination of the shrunken eye contains the following: "The microscope shows nothing that can be taken as indicating the existence of a glioma." In both instances the second eye undoubtedly contained a gliomatous growth (microscopic examination). In Brailey's second case neither eyeball was examined microscopically, but there is scarcely a doubt that the non-shrunken eye was affected by glioma.

It would seem, therefore, that the evidence that an eyeball containing a gliomatous growth may shrink is as yet inconclusive. Our case, No. 36, appears to be the most likely one recorded; the extreme difficulty of deciding by microscopic examination between a degenerating glioma and the degenerated structures of an eyeball destroyed by inflammation, tubercular or other, will be recognised by all who have had occasion to examine such specimens. The question is one of importance, and one which we hope may be settled before long.

We may here refer briefly to cases, and of two such we are cognisant, in which both eyeballs have been removed simultaneously for supposed glioma, and which subsequent examination proved not to be of that nature. It would seem advisable in such cases to remove one eye at a time, and subject it to examination before excising its fellow.

Family History.—Our endeavours to obtain reliable family history have been signally unsuccessful. What we

have obtained does not appear to be in any sense important. When known the facts are stated in the tables.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
1	24	George C.	L	2	$3\frac{6}{12}$	—	Alive
2	236	Thos. J.	R	$2\frac{6}{12}$	4	5 or 6 months later	14 months
3	209	—	L	$1\frac{6}{12}$	3	—	A few days
4	65	—	—	1	$2\frac{6}{12}$	—	—
5	365	Alfred H.	L	doubtful	6	Less than 3 months	6 months
6	252	Mary M. B.	L	„	$\frac{4}{12}$	—	$2\frac{3}{12}$ years
„	„	„	R	1	$2\frac{2}{12}$	—	6 weeks
7	323	Bertie T.	L	$1\frac{3}{12}$	$2\frac{9}{12}$	—	—
8	382	Arthur G.	L	$2\frac{1}{12}$	$2\frac{10}{12}$	9 months later	14 months

* * * Except when otherwise stated, the age is given in years.

We have had no instance in which more than one member of the family has suffered from glioma of retina.

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Tumour growing from inner surface of retina, nearly filling vitreous chamber. O.N. not invaded. Growth entirely intraocular.	—	Negative. Patient was the third of five children, all living, 1890	No recurrence 19 years later, February, 1890.
Eyeball filled by new growth, which had perforated sclera. O.N. not invaded.	R. orbit, implication of glands behind jaw	Mother had a "growth" in nose; died, æt. 24, of an acute illness.	
Globe filled with growth which extended backwards along O.N. sheath.	—	Negative.	
Growth sprouting into vitreous, half filling it. O.N. not affected	—	Not known	After-history unknown.
Globe nearly filled by growth. O.N. probably invaded	L. orbit	"	
No notes	—	Negative.	
Growth half filling vitreous nodule behind globe. O.N. involved	R. orbit	"	
Extensive intraocular growth. O.N. deeply invaded	—	A third cousin died young of uterine tumour	After-history unknown. At date of operation had two or three enlarged glands under left angle of jaw.
Eyeball filled by growth. No perforation. O.N. probably involved	Unknown	Not known	Child became blind five months before death.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
9	130	Florence G.	R	5 weeks	9 weeks	—	—
„	542	„	L	$1\frac{3}{12}$	$3\frac{6}{12}$	—	—
10	539	Thomas C.	R	$1\frac{10}{12}$	$3\frac{5}{12}$	Soon after	Uncertain, but death occurred soon
11	420	Arthur F.	R	—	$2\frac{0}{12}$	3 months	Unknown
12	307	Robert E.	L	$4\frac{0}{12}$	5	Less than 2 months	About 9 months
13	343	Eleanor P.	L	$2\frac{5}{12}$	3	—	—
14	258	James W.	L	6	$6\frac{0}{12}$	—	1 month

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Growth nearly filling globe. O.N. invaded as far back as lamina cribrosa. Glioma exophytum	—	Negative but incomplete	No recurrence in R. socket 3½ years later.
Globe filled by growth. Retina and choroid disorganised, except anteriorly. Nerve invaded by glioma cells for "a little distance" from disc. Cornea invaded by growth and staphylomatous	—	—	After-history unobtainable.
Retina, O.N., and choroid all extensively involved. O.N. cut behind the posterior limit of the invading growth. Cornea affected by growth and staphylomatous	In socket	Negative	The left eye also became affected by glioma.
Globe filled by growth, which has invaded the O.N.	Orbit	Not known	After-history unknown.
Glioma mass in posterior part of vitreous cavity. Tumour cells invade O.N. Choroid not involved	"	Negative, as far as known.	
Tumour in posterior part of vitreous. Choroid not involved. No growth posterior to lamina cribrosa	—	Negative	After-history unknown.
Globe filled by tumour. Structures much disorganised. Tumour cells found in O.N.	—	"	Died with symptoms of intracranial disease. Injury to eye two weeks before growth was noticed.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
15	257	Bertie H.	L	$1\frac{9}{12}$	$2\frac{6}{12}$	About 11 weeks	5 months
16	256	George G.	L	$4\frac{6}{12}$ "Eye squinted from birth."	5	—	Alive
17	162	Charlotte W.	L	$3\frac{6}{12}$	4	—	9 months
18	655	Ernest L.	L	$2\frac{1}{12}$	$2\frac{3}{12}$	—	—
19	615	George C.	L	$1\frac{1}{12}$	$2\frac{3}{12}$	—	—
20	678	Annie A.	R	$1\frac{6}{12}$	2	Less than 3 months.	6 months
21	645	Samuel J.	R	Within 1 month of birth.	8 weeks	—	A few months
22	606	Lizzy B.	L	Eye "always blind."	3	6 weeks	6 months

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Large growth projecting forward from O.D. and nearly filling globe. O.N. deeply invaded	Orbit and perosteum of cranial bones	Negative.	
Lower part of vitreous filled with new growth. Choroid free. O.N. invaded as far as inner surface of lamina cribrosa	—	Negative. Mother died of phthisis	In February, 1890, 11 years and 9 months after operation, patient reported by his father to be alive and well.
Mass of new growth near O.D. Choroid and O.N. both extensively involved	Orbit and cranial bones and throat	Brother has a "cancer on the instep of right foot"	Right eye became blind one week before death.
Circumscribed gliomatous growth in retina near O.D. and invading O.N.	—	Negative	Injury to L. eye by a fall off a chair, immediately before the growth was noticed. Child alive and well one year after excision. Further history unknown.
Vitreous cavity nearly filled by growth. Choroid involved	—	Paternal uncle died of phthisis	Second eye was also the seat of a glioma. It was not removed.
Rounded growth half filling vitreous cavity. O.D. cupped; tumour cells invade O.N. Choroid involved	Orbit	Negative	The left eye became blind shortly before patient's death.
Globe entirely filled by new growth. O.N. invaded by glioma cells	—	"	The second eye was removed soon after, for a similar affection. Death soon ensued.
Large mass of new growth in orbit surrounding the O.N. Eyeball filled by growth which has invaded sclerotic	Orbit	Unknown.	

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
23	583	Henry P.	L	$3\frac{6}{12}$	4	—	Alive
24	447	Sarah L.	L	$1\frac{6}{12}$	2	2 months	$3\frac{1}{2}$ months
25	456	Julia H.	L	1	$1\frac{10}{12}$	—	—
26	810	Margaret C.	R	"At birth."	$1\frac{1}{12}$	—	—
"	1269	"	L	$1\frac{8}{12}$	$2\frac{7}{12}$	—	2 months
27	929	Henrietta K.	L	$2\frac{6}{12}$	$2\frac{6}{12}$	—	—
28	1045	Gertrude L.	L	$\frac{6}{12}$	2	—	3 weeks
29	1167	William G.	R	$1\frac{6\frac{1}{2}}{12}$	2	—	Alive
30	1126	Conrad S.	R	$5\frac{8\frac{1}{2}}{12}$	6	—	—

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Globe filled by tumour, as far forward as lens. No trace of retina recognisable. O.N. probably not involved	—	Negative	Hydrocephalus in two brothers. Patient reported well (Feb., 1890) 14½ years after operation.
Tumour almost completely filled vitreous cavity. O.N. deeply invaded by gliomatous growth	Orbit	One paternal aunt died of "tumour of breast."	
Large growth almost filling vitreous. O.N. close to eye-ball invaded by glioma cells	—	Phthisis in father's family.	Further history unobtainable.
Eye almost full of soft gliomatous growth	—	Unknown	
Globe filled by glioma; A.C. partly occupied by growth. O.N. apparently not invaded	—	"	
Tumour occupies upper, inner, and lower portions of vitreous cavity	—	"	After-history unknown.
Large mass of growth; choroid and O.N. extensively involved	—	Negative	At time of operation there was a lump in the palate, which rapidly increased, and a growth appeared over left brow.
Large flocculent mass of growth. Retina affected in nearly whole extent. No note of condition of O.N.	—	"	Patient seen Feb. 21, 1890 (5½ years after operation). Is in good health.
Large growth filling three-quarters of vitreous cavity. O.D. infiltrated. O.N. at cut surface apparently normal	—	Unknown	After-history unknown.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
31	1200	Lottie S.	R	2	$2\frac{8}{12}$	—	2 months
32	1259	Isabella S.	L	5	6	—	—
33	1264	Rose H.	R	$5\frac{8}{12}$	6	—	About 3 years
34	783	Ebenezer S.	L	$1\frac{10}{12}$ " Always different to other eye "	$1\frac{1}{2}$	—	—
"	1293	"	R	$1\frac{11}{12}$	$2\frac{9}{12}$	—	" A very short time "
35	1309	Charlotte A.	L	$1\frac{4}{12}$	$2\frac{2}{12}$	Less than 1 month	9 months
"	1339	"	R	At time of exci- sion of L.	$2\frac{3}{12}$	—	8 months
36	1312	James R.	L	—	$\frac{9}{12}$	—	—

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Very large extraocular nodular growths. Globe full of gliomatous growth. O.N. much thickened	—	Negative.	
Soft nodular growth, filling posterior two-thirds vitreous chamber. No note about O.N.	—	Unknown	History of blow on left eye one year before operation. Sight said to be "lost" by doctor immediately after injury. Subsequent history unobtainable.
Friable growth, retina nearly all indistinguishable, choroid not involved. No note about O.N.	—	Negative	Exact date of child's death unknown; it is known that she died.
Tumour of lower part of retina. Choroid <i>in situ</i>	—	"	
Large fungating pink mass projecting from anterior part of eye. Globe full of growth. O.N. invaded	R. Orbit	"	Exact date of death unknown.
Globe completely filled by growth. Large extraocular mass posteriorly, in which O.N. was involved	Orbit	Unknown.	
Globe filled by gliomatous growth. O.N. slightly enlarged	—	"	
Globe shrunken; central part filled by degenerated tissue, like gliomatous growth. Evidence of choroidal inflammation; cells in O.N. probably inflammatory	—	Negative	Ten days after operation the right eye was found to be affected with glioma. After-history unknown.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
37	1460	Thomas C.	R	$3\frac{3}{12}$	4	—	—
38	1782	Ernest L.	L	$\frac{9}{12}$	4	—	4 months
39	1816	George C.	L	—	$4\frac{9}{12}$	—	Alive
40	1875	Lilly D.	R	—	$1\frac{9}{12}$	—	8 months
41	2013	Walter M.	L	$\frac{3}{12}$	1	6 weeks	10 weeks
42	2191	Rose H.	L	4 days	4 weeks	—	—
43	2233	Rose C.	L	6	6 years	—	Alive
44	2393	Ada D.	R	$2\frac{9}{12}$	3	—	10 months
45	2408	Ellen E.	L	"At birth"	$1\frac{7}{12}$	—	Alive

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Retina almost completely detached. Largish triangular mass of growth invading O.N. at disc, but cut surface apparently healthy	—	Unknown	After-history unobtainable.
Globe filled by tumour; two nodules on anterior surface of sclerotic near corneal margin. O.N. not involved	—	Negative.	
New growth fills about one-third vitreous cavity. Several separate nodules of growth, one springing from the O.D.	—	Unknown	In Dec., 1889, 4 years 7 months after operation, child reported alive and well.
Nodules of new growth on retina, latter detached from choroid except at O.D.	—	"	
Eyeball full of new growth and a large mass at posterior surface. O.N. surrounded by growth but apparently not involved	Orbit	Negative.	
Vitreous chamber filled by new growth	—	Phthisis on mother's side	Subsequent history unknown.
In lower part of retina; latter detached	—	Negative	In July, 1890, 3½ years after operation, the child was alive and well.
Eyeball filled by tumour. O.N. involved	Orbit	"	
Tumour fills three-quarters of vitreous chamber. O.N. apparently intact	—	Unknown	In Oct., 1890, 3 years 1 month after operation, child alive and well.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
46	2482	Lawrence L.	L	—	$1\frac{7}{12}$	—	Alive
47	1838	Amy S.	L	$1\frac{10}{12}$	2	—	—
48	2527	Florence A.	R	—	$\frac{8}{12}$	—	—
49	2764	Charlotte H.	L	$4\frac{9}{12}$	5	3 months	4 months
50	2768	Sidney R.	R	$\frac{4}{12}$	$\frac{5}{12}$	—	Alive
51	2824	Alice T.	L	$1\frac{9}{12}$	$2\frac{6}{12}$	4 months	6 months
52	2865	George H.	R	1	2	Less than 3 months	8 months

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
A rounded mass of growth in nasal half, and a small separate nodule on temporal side springing from retina. O.N. not involved	—	Unknown	In Nov., 1890, 3 years after operation, child alive but imbecile. The right eye had been removed by Mr. Gunn at æt. 2 months, and contained a large gliomatous growth.
Tumour almost entirely fills vitreous chamber; retina detached and pushed forwards. Growth invades O.N. as far as lamina cribrosa, and has spread to choroid in places	—	Negative	After-history unobtainable.
Large flocculent mass in vitreous cavity and between retina and choroid. Choroid and O.N. invaded by growth	—	Unknown	After-history unobtainable.
Globe entirely filled with soft new growth. O.N. invaded by glioma cells. Choroid intact	Orbit	Negative	At the post-mortem secondary growths were found in the brain and spinal cord.
Growth occupies two-thirds vitreous chamber. O.N. infiltrated by tumour cells	—	„	June, 1890, 17 months after operation, child alive and well.
Growth filled five-sixths vitreous chamber. O.N. apparently not involved	Forehead	„	Sight of the second (R.) eye was said to have been lost shortly before death.
Tumour growing from retina fills two-thirds vitreous chamber. Choroid attacked by the growth. O.N. extensively invaded by tumour cells	Orbit	Unknown.	

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
53	2938	Philip B.	R	$\frac{6}{12}$	$3\frac{6}{12}$	—	—
54	2999	Ellen W.	L	$\frac{3}{12}$	$\frac{4}{12}$	—	—
55	Mr. Morton's case.	Julia T.	R	$\frac{3}{12}$	$\frac{5}{12}$	—	Alive
"	"	"	L	$1\frac{2}{12}$	$1\frac{2}{12}$	—	"
56	Mr. Square's case	Wilmot J.	R	$6\frac{9}{12}$	7	—	"
57	Mr. Jessop's case	Minnie T.	L	$\frac{9}{12}$	$1\frac{9}{12}$	—	"
58	Mr. Gunn's case	Arthur C.	R	—	2	—	Unknown

9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Large soft growth half filling vitreous chamber, detaching retina. O.N. apparently infiltrated	—	Unknown	Further history unobtainable.
Growth from outer surface of retina filling two-thirds of globe. O.N. apparently not invaded	—	Negative	7 months after operation child alive and well.
Growth in posterior part of vitreous chamber. Retina much disorganised. Cells of new growth at anterior surface of lamina cribrosa	—	One brother died of "consumption" in early life.	
New growth fills about one-third of the vitreous chamber; it is within the retina. O.N. invaded by glioma cells	—	—	In Nov., 1890, 2 years 2 months after operation on second eye, child alive and well.
Large growth from retina invading choroid and sclera at lower part, and giving rise to rounded swelling	—	Negative	In. Feb., 1890, 1 year 10 months after operation, child alive and well.
Globe nearly filled by new growth. Retina partially detached. O.N. infiltrated with glioma or inflammatory cells	—	"	The eye was noticed to squint at æt. 6 months. In Nov., 1890, 2 years 4 months after operation, child alive and well.
Globe full of new growth, which had perforated sclera posteriorly. O.N. extensively affected	—	Unknown	Child died soon after removal of R. eye. The L. eye was blind and shrunk (? glioma). Malignant growth over parietal bone before removal of right eye.

1. No. of case.	2. Reg. No.	3. Name.	4. Eye affected.	5. Age when growth first noticed.	6. Age at date of opera- tion.	7. Date of first symptom of recurrence.	8. Duration of life after operation.
59	3059	Fredk. J.	R	$2\frac{6}{12}$	$3\frac{3}{12}$	—	—
60	Mr. Law- ford's case	Fleming C.	R	8 weeks	8 weeks	—	Alive 12 months after

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9.	10.	11.	12.
Position and extent of primary growth.	Site of recurrent growth.	Family history.	Remarks.
Soft tumour involving large part of retina. Islands of tumour cells in vitreous. O.N. not involved	—	Negative	No recurrence 9 months later (Nov., 1890).
Large soft growth springing from retina and filling vitreous chamber. O.N. apparently not involved	—	Grandfather died "cancer," æt. 55. One uncle died of phthisis	Glioma in left eye, discovered 9 months after operation on right. Probable growth in frontal bone on right side.

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