BILATERAL AMBLYOPIA OCCURRING IN APHAKIC WEST INDIANS*†

BY

D. M. WARD

Department of Ophthalmology, University of the West Indies, Jamaica

BILATERAL amblyopia occurring in West Indians is a fairly well documented entity. Important series have been recorded by Degazon (1956), Cruickshank, Montgomery, and Spillane (1961), Behrman (1962), and Crews (1963).

However, relatively few reports are available from the West Indies, particularly regarding the incidence of the condition. Degazon (1956) considered that bilateral amblyopia accounted for 2.5 per cent. of ophthalmic cases in Jamaica. Cruickshank and others (1961) described 210 cases of neuropathic syndrome in Jamaica. Behrman (1962) described seventeen cases in London, and Crews (1963) 22 cases from an estimated 40,000 West Indian population in Birmingham.

The main object of the present investigation is to assess the situation in Jamaica regarding the importance of bilateral amblyopia as a cause of poor visual result following cataract extraction. Conclusions are drawn regarding the incidence of bilateral amblyopia among an older age group.

Selection and Methods

A survey was undertaken of the cataract extractions performed at the University College Hospital of the West Indies in Jamaica during a 12-month period.

Non-Jamaicans were excluded and the investigation limited to the local mixed Negro, Chinese, Indian, and European population. No breakdown according to race was carried out, and was, indeed, considered impracticable owing to the high percentage of patients of mixed racial origin.

Also excluded were cases of traumatic and developmental cataracts.

Only senile cataract patients with a minimum age of 55 years were considered.

The corrected visual acuity was taken from a refraction examination performed 8 to 12 weeks post-operatively.

An arbitrary visual standard of 6/12 was fixed and any patient with a visual acuity which could not be connected to this standard was investigated further. If the visual acuity of either eye exceeded this arbitrary standard, the patient was excluded. However, the fundi of many of the phakic eyes were obscured by lens opacities. A few patients had had bilateral lens extractions.

A meticulous examination of the fundus was carried out and the disc was assessed as being atrophic, with temporal pallor, or normal.

Any patient with a poor corrected visual acuity and with either no abnormality of the fundus or optic atrophy was investigated by radiography of the skull and syphilitic serology.

* Received for publication November 23, 1965.

† Address for reprints: Torbay Hospital, Torquay, Devonshire.

Further neurological, radiological, or biochemical investigation was considered impracticable, particularly in view of the negative results obtained by Crews (1963) and Behrman (1962).

An examination of the visual fields was performed, but field defects tended to be inconsistent and bizarre and usually related to the blind spot or periphery, unlike the central and annular scotomata found by Crews (1963). The results were equivocal and added little of value. They are not recorded here.

Results

The cataract extractions performed during the 12 months under consideration totalled 307 in 285 patients. The visual results of these cataract extractions may be summarized as follows:

<i>Group A:</i> Corrected visual acuity of 6/12 or better in the operated eye or eyes	141
<i>Group B:</i> Visual acuity of 6/18 or worse in the operated eye, with obvious pathology ..	90
<i>Group C:</i> Corrected visual acuity of 6/18 or worse in the operated eye, with either no obvious pathology or optic atrophy, the binocular visual acuity being 6/18 or worse	30
<i>Group D:</i> Corrected visual acuity of 6/18 or worse in the operated eye, without obvious pathology, the binocular visual acuity being 6/12 or better	5
<i>Group E:</i> Patients not followed-up because of death, emigration, or non-attendance ..	19

Some patients who had bilateral extraction fell between Groups A and B in that they had good visual acuity in one eye and poor visual acuity with obvious pathology in the other. It was beyond the scope of this investigation to break these down further and such patients were put into Group B. Thus, the percentage of patients obtaining a satisfactory visual standard was fractionally better than the figures suggest.

Group D with unilateral amblyopia was not considered further and the patients usually gave a history of squint.

The patients in Group C were investigated further with skull radiography and syphilitic serology. All the skull x rays were normal. Two patients showed positive serology (Wassermann reaction and V.D. Research Laboratory tests) and were excluded. Thus 28 patients were considered possibly to be suffering from West Indian bilateral amblyopia; details are shown in the Table (opposite).

Where the visual acuity is not recorded the eye is phakic with advanced lens opacity precluding adequate assessment of visual function.

* An asterisk is shown alongside the visual acuity of those phakic eyes in which neither lens opacity nor other pathology was considered adequate to account for the poor visual acuity.

Details of the post-operative refraction are included in order to demonstrate the absence of any correlation between a poor visual result and a high astigmatic error.

Discussion

Of the aphakic patients being considered, 28 (9.8 per cent.) of the total of 285 showed amblyopia of unknown origin. The percentage showing amblyopia

TABLE
CLINICAL PARTICULARS OF 28 PATIENTS WITH BILATERAL AMBLYOPIA

Case No.	Sex	Age (yrs)	Corrected Visual Acuity		Refraction	Optic Discs	
			Right	Left		Right	Left
1	F	57	6/24		+14 D sph.	Temporal pallor	
2	M	58	6/60		+10 D sph./+1 D cyl.	Temporal pallor	
3	F	62		6/60	+11.5 D sph./+2 D cyl.		Normal
4	M	60	6/18	6/18	+10 D sph./+ 1 D cyl.	Temporal pallor	Temporal pallor
5	M	64		C.F	+9 D sph./+3 D cyl.	Optic atrophy	Optic atrophy
6	M	63	6/18		+9.5 D sph./+2 D cyl.	Normal	
7	F	65	6/60	6/60	+10 D sph./+1 D cyl.	Temporal pallor	Temporal pallor
8	M	70	6/36	No PL Venous thrombosis	+10 D sph.	Temporal pallor	
9	F	69	6/60	6/24	+11 D sph.	Temporal pallor	Temporal pallor
10	F	61		6/36	+9 D sph./+2.5 D cyl.		Normal
11	M	68	6/36	6/36	+10 D sph./+2 D cyl.	Normal	Normal
12	M	57		6/18	+12 D sph.		Normal
13	F	69	6/60		+11.5 D sph./+2 D cyl.	Temporal pallor	
14	M	70	6/24	*6/36	+9.5 D sph./+1.5 D cyl.	Normal	Normal
15	M	57	6/24	6/24	+10 D sph.	Temporal pallor	Temporal pallor
16	F	62		1/60	+11 D sph.		Optic atrophy
17	F	61	6/60		+10.5 D sph./+1 D cyl.	Normal	
18	F	59	6/36	6/36	+13 D sph./+1 D cyl.	Temporal pallor	Temporal pallor
19	M	65	*4/60	6/24	+12 D sph./+1 D cyl.	Temporal pallor	Temporal pallor
20	M	68	6/36	6/36	+9.5 D sph./+1 D cyl.	Normal	Normal
21	M	67	6/36	*C.F	+12 D sph.	Normal	Normal
22	F	71	6/36		+10 D sph./+2 D cyl.	Temporal pallor	
23	M	60	3/60		+11.5 D sph./+1 D cyl.	Temporal pallor	
24	F	60	6/18	6/18	+12 D sph./+1 D cyl.	Normal	Normal
25	F	63		4/60	+12 D sph.		Temporal pallor
26	M	68		6/24	+13.5 D sph./+1 D cyl.		Normal
27	M	58	6/36	*C.F	+11 D sph./+1 D cyl.	Temporal pallor	Temporal pallor
28	F	64	6/60	6/60	+9.5 D sph./+2.5 D cyl.	Temporal pallor	Temporal pallor

bilaterally may possibly be less than this 9.8 per cent., as lens opacities precluded adequate visual assessment of the second eye in approximately half the cases. The lowest possible incidence of bilateral amblyopia is therefore 5.4 per cent.

A further factor which may render the percentage artificially high is the possibility that, owing to the age group being considered, certain of the cases included were in a pre-macroscopic stage of a sight-affecting pathological lesion such as degenerative macular change.

However, an aspect which probably compensates for the above factors is that several of those showing pathological changes may well have had co-existing bilateral amblyopia and would have been excluded from the cases being considered in detail.

It is probably a significant point that, of the 28 patients selected, only eight (29 per cent.) were over 65 as compared with 48 per cent. of the whole series. The presumption is that, as the patients became older, they developed other more obvious pathological changes which excluded them from the group with bilateral amblyopia.

Although a series of patients undergoing cataract extraction might be considered unselected from the point of view of neuro-retinal function, this may not be so. Patients with only moderate lens opacity are possibly more likely to be selected for operation if there is co-existent amblyopia, as the visual function is consequently

more severely affected. However, the method of pre-operative selection of cases is such that this is unlikely to be very significant, since only patients with advanced opacity were selected for surgery.

The total effect of the interplay of the above factors on the final percentage is unknown, but probably the incidence of bilateral amblyopes among 50 to 80-year-old patients after cataract extraction in Jamaica is about 5 to 7 per cent.

Degazon (1956) suggested an incidence of bilateral amblyopia in Jamaicans as being 2.5 per cent., and this is probably not inconsistent with the 5 to 7 per cent. suggested by the present results. Degazon's figure showed all eye attendances in Jamaica, which would include a high percentage of children attending with infective or traumatic eye conditions. Bilateral amblyopia in West Indians usually arises during early adult life onwards so that, if Degazon's figure were corrected to show true incidence among adults, it would be considerably higher. Also, whilst bilateral amblyopia may not be increasingly common amongst West Indians, it is certainly becoming increasingly recognized.

Certain other aspects are of interest. Few of the affected patients showed very poor visual acuity. Only three of the 28 patients (11 per cent.) failed to achieve a corrected visual acuity of less than 6/60. Generally those patients with the paler discs had the worse vision.

As a corollary to this only two patients (7 per cent.) had optic atrophy. However, fifteen (53 per cent.) showed temporal pallor of the discs. The discs of eleven (40 per cent.) were considered to be normal. Behrman (1962) found approximately 7 per cent. of his series with optic atrophy and 40 per cent. normal. Crews (1963) found 13 per cent. with pallor of the whole disc and 65 per cent. with temporal pallor. The three sets of figures are consistent, particularly when difficulties in interpretation of the Negroid fundus are taken into consideration.

The sex incidence of the amblyopic patients was equal (54 per cent. male). This finding is in keeping with the series of Degazon (1956) from Jamaica but not with those of Behrman and Crews from the United Kingdom. These figures of the latter authors are probably not significant, as they themselves point out, as the immigrant West Indians include a large predominance of males. Behrman (1962) postulated that if the condition were genetic in origin the sexes should be affected equally.

Crews (1963) comments on the fact that only one of his 22 patients showed positive syphilitic serology. Of the present series only two from a total of thirty showed positive serology. This is remarkable only in that it is a lower percentage positive figure than for the normal Jamaican population which is variously estimated as 20-40 per cent. positive.

Unfortunately, the present investigation does not help in elucidating the aetiology of bilateral amblyopia as found in the West Indies. Most patients, both normal and amblyopic, drink bush teas to a greater or lesser extent. As Degazon (1956) pointed out, there was little or no evidence of malnutrition among affected patients.

There is no reason to doubt the hypothesis as put forward by Behrman (1962) of a genetic African race influenced predisposition to amblyopia.

Summary

The importance of bilateral amblyopia as a cause of a poor visual result following cataract extraction in West Indians is assessed.

It is submitted that this disorder is more common than previously considered and an incidence of 5 to 7 per cent. among 50 to 80-year-old Jamaicans undergoing cataract extraction is suggested.

Factors influencing this figure are postulated.

Certain clinical aspects of the condition are considered.

I wish to thank Mr. Dennis Degazon and Mr. Basil Ward for permission to publish details of cases under their care.

REFERENCES

- BEHRMAN, S. (1962). *Brit. J. Ophthalm.*, **46**, 554.
CREWS, S. J. (1963). *Trans. ophthalm. Soc. U.K.*, **83**, 653.
CRUICKSHANK, E. G., MONTGOMERY, R. D., and SPILLANE, J. D. (1961). *Wld Neurol.*, **2**, 199.
DEGAZON, D. W. (1956). *W. Indian med. J.*, **5**, 223.