Diabetic Retinopathy in African Patients*

L. LEVIN, M.B. CH.B., M.R.C.P., AND M. GELFAND, C.B.E., M.D., F.R.C.P. Professor of Medicine, Department of Medicine, University of Rhodesia, Salisbury, Rhodesia

SUMMARY

A study of 50 Rhodesian Africans is presented to assess the incidence of retinopathy on admission; the findings are similar to those in Jamaica, America, Britain and other parts of the world. Direct comparisons, however, are not possible as it is not known whether hypertensive diabetic patients have been included in other series. The findings in this series would appear not to concur with the general feeling that the diabetic retinopathy is not as common in African as in European patients, and a more extensive outpatient follow-up is suggested to assess the true pattern of retinopathy in our African diabetics.


Diabetic retinopathy can be defined as the presence of retinal micro-aneurysms with or without haemorrhages and exudates, occurring in a diabetic patient. Since the changes can also occur in hypertensive retinopathy, this definition should really strictly apply to normotensive diabetic patients.

The 'simple' retinopathy defined above may progress to a 'malignant' retinopathy, which includes new vessel formation, fibrous proliferation, vitreous haemorrhages, retinal detachment and secondary glaucoma.

Diabetic retinopathy is a serious complication of diabetes and accounts for 10% of all cases of blindness in the USA, and for 7% in Britain. Although most workers hold that the incidence of diabetes in the Rhodesian African is increasing, diabetic retinopathy in those seen at Harari Hospital is still thought to be uncommon. We present a prospective study into the incidence of retinopathy in diabetic patients admitted to Harari Hospital.

METHOD AND MATERIALS

All new diabetic patients presenting to the Medical Unit during the period January 1970 to January 1971 were examined for evidence of a retinopathy. The age, sex, blood pressure, blood sugar on admission, and duration of symptoms before the treatment, were recorded. Each case was seen by an ophthalmic surgeon, Dr Peacock.

RESULTS

Fifty patients were seen and of these, 3 had a diabetic retinopathy (2 females and 1 male). The first case had discrete micro-aneurysms, the second case had micro-exudates round both maculae, and the third case had exudates around the left macula with predominant hypertensive retinopathy.

Age Incidence

No patients under the age of 40 years presented with diabetic retinopathy (Table I).

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>No.</th>
<th>With retinopathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 19</td>
<td>3</td>
<td>—</td>
</tr>
<tr>
<td>20 - 29</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>30 - 39</td>
<td>7</td>
<td>—</td>
</tr>
<tr>
<td>40 - 49</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>50 - 59</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>60 +</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>3</td>
</tr>
</tbody>
</table>

Blood Pressure

The mean blood pressure in those patients who presented with a retinopathy was 160/85 mmHg; the individual blood pressure recordings were 110/65 mmHg, 125/80 mmHg and 240/110 mmHg. The mean blood pressure in those patients who presented without a retinopathy was 125/80 mmHg.

Blood Sugar

The mean blood sugar level on admission for patients with retinopathy was 288 mg/100 ml and the individual results were 163 mg, 200 mg and 500 mg/100 ml. The mean blood sugar on admission for patients without retinopathy was 400 mg/100 ml.

DISCUSSION

In this series 6% of patients had diabetic retinopathy at the time of being first diagnosed as diabetics. Tulloch found that 6% of his Jamaican patients had a retinopathy when the duration of the diabetes was less than one year. Furthermore, Miki et al. found that only 7% of their Japanese patients had a retinopathy when the duration of the diabetes was less than one year, and Soler et al. found that 7.5% of 5157 newly-diagnosed diabetic
patients in Birmingham, England, had a diabetic retinopathy. Seftel and Walker found that 11% of new Bantu diabetics in Johannesburg had a retinopathy. Tulloch's impression is that diabetic retinopathy is not less common in tropical countries (22% of diabetics in Jamaica and 22.7% in Ralli's American series developed retinopathy.5

It is very difficult to compare the incidence of diabetic retinopathy in Rhodesian Africans with the incidence in other parts of the world; this is because most other articles on the subject fail to state whether or not they have included hypertensive diabetics in their studies. This is an important point, as retinal changes due to hypertension may simulate those due to diabetes,6 and the exact aetiology of the retinopathy in the hypertensive diabetic may therefore be difficult to ascertain.

Although we have included 1 patient in this series who had a blood pressure of 240/110 mmHg, we cannot be certain that his retinopathy was in fact caused by the diabetes or by hypertension. If this patient was excluded from this series, our incidence for patients with a diabetic retinopathy at the time of being diagnosed as diabetic, would only be 4%, which would be slightly lower than in other parts of the world if they had omitted hypertensive diabetics from their series.

Although advances are being made in detailed observations of structural retinal changes in diabetes, the exact cause remains unknown. Retinal micro-aneurysms, exudates, haemorrhages and new vessel formation are not specific to diabetic retinopathy, and are probably only secondary to engorgement and stasis within the retinal capillaries. Retinal capillary micro-aneurysms may also be found in hypertension, retinal venous thrombosis and macroglobulinaemia.

None of the juvenile-onset diabetics presented with retinopathy; this concurs with Colwell's series, in which he found retinopathy to be rare within the first 5 years of the disease in juvenile-onset diabetics. Tulloch's series in Jamaica showed that no patients under 30 years of age had signs of a retinopathy.

At face value it therefore appears that the incidence of retinopathy in the Rhodesian African is following the same pattern as in other parts of the world, and this initial study shows that the complication is not less common. However, the true incidence of retinopathy cannot be estimated on the first visit, as it increases with the duration of the diabetes.

This is well illustrated by Seftel and Walker's findings in South African Bantu diabetics—11% of their new diabetic patients had retinopathy, whereas 45% of their old diabetic follow-up patients (mean duration of disease being 7 years) had retinopathy.

The blood sugar levels of patients who presented with retinopathy were not elevated as compared with the levels in those without retinopathy; the blood sugar on admission cannot be taken as an indication of the severity of the diabetes.

Coogan's findings showed that diabetic retinopathy reflects neither the severity nor the course of the disease. However, several authorities in various countries agree that inadequacy of diabetic control is reflected in the occurrence of retinal changes, severe retinitis being more common in the poorly controlled cases.

One patient not included in this series was admitted to the University medical unit after this study had been concluded, and was found to have retinal exudates and microaneurysms; this patient was controlled on oral hypoglycaemic agents and was re-admitted a year later, confused, with overflow urinary incontinence, decreased tone and power with wasting in all limbs, and decreased sensation below both knees. The patient died, but unfortunately, permission for a postmortem examination could not be obtained. Diabetic neuropathy is rarely encountered in Rhodesian African diabetics, and the association between this and retinopathy in the same patient is not necessarily in accordance with Coogan's findings regarding the association between diabetic retinopathy and the course of the disease.° None of the cases in this series had evidence of neuropathy.

The mean duration of symptoms before treatment in patients presenting with a retinopathy was 12 weeks, while that in patients without retinopathy was 4 weeks. Miki et al. report in their series of 289 untreated cases of diabetics in Japan, that retinopathy was more frequent and severe when the duration of the diabetes was longer before treatment was initiated. However, these observations were only really significant when the duration of the diabetes was more than 5 years before treatment was started. All cases in our series were admitted to hospital within 3 months after the onset of symptoms.

REFERENCES