Rapid onset of proliferative retinopathy in young insulin-independent diabetics

"Proliferative" retinopathy is unusual in young patients with diabetes of less than 15 years' duration, and studies have shown a relationship between poor diabetic control and the rapidity of development of retinopathy. We describe four patients diagnosed as diabetic before the age of 40 who developed "proliferative" retinopathy within a few years of diagnosis, although they were insulin-independent and "well controlled." Two had severe renal disease (fetal in one case) and all had foot ulceration.

Patients

Details of the four patients are given in the table. All had retinal neovascularisation with repeated vitreous haemorrhages and secondary fibrin. Case 1 was registered blind. Case 4 was blind in one eye, and the other had severe visual impairment. All suffered from recurrent foot ulceration. The first patient died of renal failure four years after diagnosis, and the second was uraemic nine years after diagnosis. The others had no evidence of renal disease eight and six years after diagnosis.

Two patients had first degree relatives with uncomplicated maturity-onset diabetes (the mother and grandmother of case 2 and the grandmother of case 3). Patient 4 had no family history of diabetes, and the other (case 1) had a sister with "diabetes and renal disease" and a brother who died in early adult life from "diabetes with renal failure and retinopathy." This patient's mother also had diabetes and died "young" from tuberculosis. Unfortunately full clinical details of the family members are not available.

Discussion

These patients, although young, appear to be "maturity-onset insulin-independent" rather than "juvenile" diabetics. Tattersall reported three families in which mild insulin-independent diabetes occurred in young patients and was inherited as a Mendelian dominant. In these patients retinopathy was much less common than in an average diabetic population, and none had proliferative retinopathy.

Retinopathy is considered to be a late complication of diabetes. Nevertheless it has been found at diagnosis in a small number of diabetics, being more frequent in older patients and then considered to be the result of pre-existing mild diabetes of long duration. Soler described 10 patients under the age of 40 years who had retinopathy at diagnosis. Only one had "proliferative" retinopathy, and he later required insulin. None of the others observed for several years had evidence of an accelerated type of retinopathy. Of our cases, 3 and 4 did not have retinopathy at diagnosis. The retinal status of the others at diagnosis is unknown, but all four developed an accelerated type of retinopathy with extensive neovascularisation. In addition, all had foot lesions and patients 1 and 2 had renal failure. Walsh described the association of foot lesions with retinopathy in newly diagnosed diabetics who had a striking indifference towards their illness. However, the mean age of their patients was about 60 years.

One of our patients denied all symptoms at diagnosis and may have had diabetes for several years; the other three admitted to symptoms only for a few months before diagnosis but could have had abnormal glucose tolerance for much longer. Thus the four patients described differ from previously described groups of diabetic patients. They are not insulin-dependent, were all under 40 at diagnosis, and do not appear to fit into the hereditary type of diabetes described by Tattersall because of their proliferative retinopathy.

Whether or not these four represent a homogeneous diagnostic category, they draw attention to a problem not previously described of serious complications even in recently diagnosed young patients with mild, easily controlled, insulin-independent diabetes.

ADDENDUM—Since writing this paper we have seen another man aged 39 who had been diabetic for 10 years and was controlled on diet and oral treatment. He has developed severe proliferative retinopathy.

Clinical details of the four patients

<table>
<thead>
<tr>
<th>Case No</th>
<th>Sex</th>
<th>Age diabetes diagnosed</th>
<th>Presentation</th>
<th>Time after diagnosis proliferative retinopathy diagnosed</th>
<th>BP (mm Hg)</th>
<th>Weight at diagnosis as % of standard weight</th>
<th>Treatment of diabetes</th>
<th>Mid-morning blood sugar levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>35 yr</td>
<td>Ulcer on foot</td>
<td>2 yr</td>
<td>220/110</td>
<td>115%</td>
<td>Sulphonylurea</td>
<td>Always &lt;10 mmol/l</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>34 yr</td>
<td>Glycosuria found at routine examination</td>
<td>2 yr</td>
<td>180/95</td>
<td>110%</td>
<td>Sulphonylurea initially, later biguanide</td>
<td>6-16 mmol/l</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>37 yr</td>
<td>Thirst and polyuria</td>
<td>7 yr</td>
<td>155/110 before treatment, 130/90 after treatment</td>
<td>147%</td>
<td>Diet alone</td>
<td>Always &lt;11 mmol/l</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>37 yr</td>
<td>Ulcer on foot and thirst</td>
<td>1 yr</td>
<td>125/85</td>
<td>104%</td>
<td>Sulphonylurea initially, biguanide added later</td>
<td>5-12 mmol/l</td>
</tr>
</tbody>
</table>

1 Colwell, J A, Diabetes, 1966, 15, 497.
2 Tattersall, R B, Quarterly Journal of Medicine, 1974, 170, 339.