Diabetic retinopathy in adult patients with cystic fibrosis-related diabetes

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Introduction

Cystic fibrosis-related diabetes is a well-recognized complication in patients with cystic fibrosis. As patients with cystic fibrosis survive longer, the prevalence of cystic fibrosis-related diabetes will rise (1,2). Cystic fibrosis-related diabetes has distinctive clinical and pathological features compared with non-cystic fibrosis-related diabetes (3). Microvascular complications, including diabetic retinopathy, were regarded as very rare in the past in these patients (4,5) and regular screening for diabetic retinopathy is not a universal practice in cystic fibrosis clinics in the U.K. Recently, cases of diabetic retinopathy have begun to emerge, mainly in patients with cystic fibrosis-related diabetes for 10 years or more (6,7). The aim of this study was to determine cross-sectionally the prevalence of diabetic retinopathy in adult patients with cystic fibrosis-related diabetes for 5 yr or more who were attending a national cystic fibrosis centre in the U.K.

Patients and Methods

Thirty-four adult patients (aged 16 years or above) with cystic fibrosis-related diabetes for 5 yr or more attended the Royal Brompton Hospital Cystic Fibrosis Clinic in September 1996. Cystic fibrosis was diagnosed by positive sweat tests and typical clinical findings with or without genotype confirmation. Cystic fibrosis-related diabetes was diagnosed by repeated raised random or fasting blood glucose and/or oral glucose tolerance test. Two of the 34 patients were unable to participate in this study due to work commitments. Of the remaining 32 patients, two were living abroad and underwent ophthalmic examinations by ophthalmologists locally. Another patient was too unwell to be examined but she had recently undergone ophthalmic examination by her local optician. The results of these three patients' examinations were obtained. The remaining 29 patients were examined by experienced ophthalmologists between September 1996 and March 1997. Each patient underwent slit-lamp biomicroscopy with 78 and 90 dioptre indirect lenses. The patients' pupils were dilated with 1% tropicamide. Blood samples were obtained for the measurement of glycosylated haemoglobin within 3 weeks of their eye examinations. The levels of glycosylated haemoglobin were determined by Ion Capture Assay method (Abbott Laboratories, U.S.A.). All 32 patients received insulin for their diabetes and were pancreatic insufficient, requiring pancreatic enzyme supplementation. Continuous variables were summarized with median and range. Differences between groups were tested with the Mann-Whitney test. This study has the local ethics committee's approval and written or informed consents were obtained from all patients examined.

Results

The median age of the patients examined was 27 years (range: 19-43 years) and the median duration of diabetes was 9 years (range: 5-29 years). There was an equal sex distribution. Five patients were found to have diabetic retinopathy (see Table 1). The prevalence of diabetic retinopathy in patients with diabetes for 5 yr or more and 10 yr or more were 16% (five of 31 patients) and 23% (three of 13 patients), respectively. None of the eight patients who had had diabetes between 5 and 6 yr were found to have diabetic retinopathy. Glycosylated haemoglobin levels were not significantly different between the groups of patients with and without diabetic retinopathy (median HbAlc 6.2% vs 7.3%, respectively, P=0.25).

Discussion

We found a high prevalence of diabetic retinopathy in our patients with cystic fibrosis-related diabetes, particularly in those who had diabetes for 10 yr or more. In patients with insulin-dependant diabetes mellitus, tight glycaemic control delays the onset and slows the progression of clinically important retinopathy (8). This may also apply to patients with cystic fibrosis-related diabetes. No significant difference in the glycosylated haemoglobin levels was found between our patients with and without diabetic retinopathy but the number of patients studied was relatively small. It is clear from our study that cystic fibrosis-related diabetic retinopathy should no longer be regarded as rare. This complication should be screened for at least annually, by individuals experienced in the diagnosis of diabetic retinopathy, particularly in those patients with diabetes for 5 yr...
TABLE 1. Characteristics of the adult cystic fibrosis patients with diabetic retinopathy

<table>
<thead>
<tr>
<th>Case</th>
<th>Age/sex</th>
<th>Duration of diabetes (yr)</th>
<th>Family history of diabetes</th>
<th>Retina examination findings</th>
<th>Glycosylated haemoglobin (normal: &lt;6.2%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35 F</td>
<td>23</td>
<td>Yes</td>
<td>Proliferative retinopathy</td>
<td>8.8</td>
</tr>
<tr>
<td>2</td>
<td>34 M</td>
<td>12</td>
<td>No</td>
<td>Maculopathy</td>
<td>5.6</td>
</tr>
<tr>
<td>3</td>
<td>29 M</td>
<td>12</td>
<td>No</td>
<td>Background retinopathy</td>
<td>6.2</td>
</tr>
<tr>
<td>4</td>
<td>21 M</td>
<td>9</td>
<td>No</td>
<td>Background retinopathy</td>
<td>7.4</td>
</tr>
<tr>
<td>5</td>
<td>21 F</td>
<td>7</td>
<td>No</td>
<td>Background retinopathy</td>
<td>6.0</td>
</tr>
</tbody>
</table>

or more. Early treatment and regular follow-up can then be given in order to prevent the retinopathy-related visual impairment and/or blindness.

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References