FREQUENT OUTPATIENT FOLLOW-UP IMPROVES SEVERE HYPOGLYCAEMIA AND MODERATE HYPERGLYCAEMIA IN INSULIN-DEPENDENT DIABETIC PATIENTS

Un suivi fréquent diminue les hypoglycémies sévères et les hyperglycémies modérées chez des patients diabétiques insulino-dépendants

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Intensive insulin therapy, though recommendable in most insulin-dependent diabetic patients [1], is limited by increased risk of severe hypoglycaemia [1-3] and the need for considerable involvement of the health-care team, e.g. multi-specialist visits, repeated phone contacts [1, 4] and detailed educational sessions [5]. Such involvement may increase the cost of management and reduce the large-scale applicability of intensive insulin therapy [6]. The aim of our study was to determine over a 6-month period whether a strategy based simply on more frequent, though conventional, outpatient clinic visits could 1) improve the degree of diabetic control without creating increased risk of severe hypoglycaemia in intensively treated patients incapable of attaining near-normoglycaemic goals, and 2) reduce the rate of severe hypoglycaemia without decreasing mean glycaemic levels in a category of similar patients prone to frequent severe hypoglycaemia.

Eleven insulin-dependent diabetic patients (4 male, 7 female) gave their informed consent to take part in the study. The major inclusion criteria were frequent (≥1 event/month) severe hypoglycaemic attacks, defined as hypoglycaemia with coma and/or requiring third-person intervention and/or unsatisfactory (though not catastrophic) blood glucose control, i.e. glycated haemoglobin values of 8-10% (normal ≤6.1%). These conditions had persisted despite recent 5-day hospitalisation in our educational unit (including instruction and training in blood glucose monitoring, diet, management of hypoglycaemia, and insulin dose adjustment) and intensive diabetes management [including near-normoglycaemic goals according to DCCT recommendations [1]: ≥3 insulin injections per day or subcutaneous portable insulin pumps, and self-monitoring of blood glucose (≥4 measurements/day)].

The mean age of the patients was 47 ± 4 years (diabetes duration 27 ± 9 years, body mass index 23 ± 2). All patients had microangiopathic complications: 10 retinopathy and 1 nephropathy. Six were experiencing repeated severe hypoglycaemia and had poor hypoglycaemia awareness, though without severe disruption of everyday life or hospitalisation (Table I).

The patients were seen by one of us (MJH) in our outpatient clinic. Major changes from preceding regular diabetes visit schedules were frequency (one visit per month instead of one every 3-4 months) and duration (30-45 vs 20-30 min): exclusive focus on diabetes control, including discussion comparing present HbAlc levels, mean capillary glucose values and hypoglycaemia with the near-normoglycaemic targets set for the DCCT intensive group [1]; and assessment of patient knowledge and attitude towards hypoglycaemia episodes based on a 26-item personal questionnaire. During initial visits, the insulin therapy regimen was changed from 3 to 4 injections daily in one patient and to subcutaneous external insulin pumps in another.
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insulin doses themselves. V alues are given as mean
psychologist involved, and patients were told to adjust
was no phone contact between visits, no nurse or
respectively, NS). Contrary to DCCT procedure, there
changed (41
6-month period. Total insulin dosage remained un-
Thus, 5, 3 and 3 patients respectively were under 3 in-
Table I.
Vol. 23, n° 1, 1997 85

Table I. Frequency of severe hypoglycaemia and HbA1c levels in
6 patients prone to severe hypoglycaemia (No. 1 to 6) and 5 chronically
hyperglycaemic patients (No. 7 to 11).

<table>
<thead>
<tr>
<th>Severe hypoglycaemia</th>
<th>Glycated Hb (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n/month)</td>
<td>month 0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
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<tr>
<td>4</td>
<td>2</td>
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<tr>
<td>5</td>
<td>11</td>
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<tr>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
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<tr>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>0.1</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Thus, 5, 3 and 3 patients respectively were under 3 injec-
tions, 4 injections and on insulin pumps during the
6-month period. Total insulin dosage remained un-
changed (41 ± 3 vs 39 ± 4 IU/day at months 0 and 6
respectively, NS). Contrary to DCCT procedure, there
was no phone contact between visits, no nurse or
psychologist involved, and patients were told to adjust
insulin doses themselves. Values are given as mean ± S.E.M. except when otherwise mentioned. Compari-
sions were made using Wilcoxon tests.
Glycated haemoglobin values improved in all pa-
tients, falling from 8.7 ± 0.3 % at month 0 to
7.9 ± 0.3 % at month 6 (p < 0.01), i.e. a mean ± SD
change of 0.8 ± 0.5 %. In the subgroup of 5 patients
not prone to severe hypoglycaemia, no such episodes
were recorded during the 6-month follow- up. In the
subgroup of 6 severe hypoglycaemia-prone patients,
the number of episodes fell from 7.5 ± 4.0 (range
1-26) to 0.7 ± 0.2 (range 0-1) per month (p < 0.05). In
this subgroup, glycated haemoglobin values fell from
8.4 ± 0.4 % to 7.8 ± 0.5 % (p < 0.05), i.e. a mean ± SD
change of 0.6 ± 0.4 %. Detailed values are given in
Table I.

Several authors have recently shown that it is pos-
sible to intensify insulin therapy and near-normalise
glucose control while reducing, instead of increasing
the patient’s improved knowledge or more effective
adaptation of insulin dosage.

We found that glycated haemoglobin levels could
be reduced from 8.7 to 7.9 % over a 6-month
follow-up period without increasing the risk of severe
hypoglycaemia. In a subgroup of subjects prone to
frequent severe hypoglycaemia the number of events
was reduced ten-fold without any need to increase
overall glycaemic control. In fact, glycated haemoglo-
bin levels were reduced in this subgroup from 8.4 to
7.8 %. This subpopulation, though relatively uncom-
mon given the unusually high frequency of severe
hypoglycaemia, did not exactly meet the criteria for
brittle diabetes [10].

These findings, though significant, need to be con-
fhmed in a larger population in order to evaluate the
practicability of the strategy. A control group followed
conventionally will be required to eliminate physician-
related effects. The study should be prolonged after
return to standard follow-up. It will be necessary to
determine which specific aspect of intervention is re-
sponsible for the improvement of glycaemic control:
the patient’s improved knowledge or more effective
adaptation of insulin dosage.
Sincerely yours.

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