Clinical Efficacy Observation of Glimepiride in the Treatment of Type 2 Diabetes

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Abstract: Objective: To observe the efficacy of glimepiride in the treatment of type 2 diabetes, evaluate its effectiveness and safety, 150 patients were enrolled according to the criteria, among which, 92 cases were treated with glimepiride and 58 cases with glibenclamide. Methods: Glimepiride was given at 1mg/d and glibenclamide at 1.25mg/d before breakfast. Dosage should be adjusted every 1-2 weeks according to fasting blood glucose level. The maximum dose of glimepiride was 8mg/d and the maximum dose of glibenclamide was 15mg/d. The changes of six metabolic indexes in the two groups were observed after 12 weeks. Results: Fasting blood glucose(FBG), 2-hour post-meal blood glucose(2hBG) and glycosylated hemoglobin(HbAlc) decreased significantly in both groups after treatment; The 2hc-p of glimepiride group decreased significantly after treatment; There were no significant changes in fc-p and body mass index (BMI) among the two groups. Conclusion: Glimepiride and glibenclamide have similar hypoglycemic effects. However, glimepiride can significantly reduce the level of 2hc-p, so glimepiride is the preferred hypoglycemic drug for patients with type 2 diabetes.

Keywords: Glimepiride; Type 2 diabetes; Hypoglycemic Effect


1 Introduction

Diabetes is now the third non-communicable disease to threaten people's health and life after cancer and cardiovascular disease. Diabetes is so prevalent that scientists are jumping on the bandwagon to develop treatments for it. Glimepiride plays an important role in the treatment of diabetes. Glimepiride is the third generation of sulfonylureas for oral hypoglycemic drugs. Compared with other sulfonylureas, glimepiride has the characteristics of less increase in plasma insulin level, stronger extracellular pancreatic islets action, good tolerance and only one dose at a time. Because of its high efficiency, long-term effect, small dosage, less adverse reactions and other advantages, it has been used in clinical treatment of type 2 diabetes which cannot be controlled by diet and exercise. Glimepiride has dual effects on the inside and outside of the pancreatic islets [1], which can can effectively improve the metabolic disorder caused by insulin resistance. In order to observe the efficacy and adverse reactions of glimepiride in patients with type 2 diabetes, 150 patients with type 2 diabetes were observed in this study, and their clinical efficacy and safety were analyzed [2-4]. Meanwhile, glibenclamide was used as a positive control. The results are as follows:
2 Data and Methods

2.1 Object

All 150 patients with type 2 diabetes met the WHO criteria for diabetes diagnosis in 1999 [2], and there was no secondary failure of sulfonylureas. Patients with such drugs needed to stop taking them for 1 week before being enrolled. The patients should have no ketosis, no hepatic or renal dysfunction, no pregnancy or lactation. A total of 150 patients were randomly divided into glimepiride group (n = 92) and glibenclamide group (n = 58).

2.2 Methods

The initial dose of glimepiride was 1mg/d, and it was taken before breakfast. The total course of treatment was 12 weeks, and the first 4 weeks were the adjustment period. The dosage was adjusted every 1-2 weeks according to the changes of blood glucose, with the maximum dosage being 8mg/d. Glibenclamide was given at an initial dose of 1.25mg/d, with a maximum dose of 15mg/d, and given twice when the dose exceeds 5mg/d. The diet and exercise patterns should be basically the same for the two groups of patients before and after medication.

2.3 Index Observation

FBG, 2hBG, HbAlc, f-cp, 2hc-p, blood pressure, TG, BMI and other indicators were examined before and after taking the medicine. Blood glucose was measured by GOD method. HbAlc was determined by liquid chromatography. C-p is measured by radioimmunoassay, within the group of CV < 5%, between the group of CV < 10%.

2.4 Statistical observation

Results data were expressed as x±s. Paired t test was used for data before and after treatment.

3 Results

3.1 Patient Distribution

150 patients with type 2 diabetes were randomly assigned to either glimepiride group or glibenclamide group for treatment. In the 92 patients of glimepiride group, 50 patients were males and 42 patients were females, whose age range was within 50.3 ± 7.9, and body mass index was within 25.0 ± 3.2. In the 58 patients of glibenclamide group, 30 patients were males and 28 patients were females, whose age range was within 50.1 ± 7.7, and body mass index was 25.3 ± 3.1. There was no significant difference between the two groups, so then can be comparable to each other.

3.2 Treatment Effect to the Diabetes

In the 12-week test, the hypoglycemic effect of glimepiride group was good, with a decrease of 3.07mmol/L, 4.1mmol/L, and 1.7 % compared to before treatment with that of FBG(10.29 ± 2.20 before treatment, 7.21 ± 1.58# after treatment), 2hBG(14.38 2.68 ± before treatment, 10.58 ± 1.65# after treatment), HbAlc(9.13 ± 1.37 before treatment, 7.56 ± 1.33* after treatment). The difference was statistically significant, which was similar to the hypoglycemic effect of glibenclamide. For the glibenclamide, the results were FBG (10.02 ± 2.33 before treatment, 7.24 ± 1.52# after treatment), 2hBG (14.12 ± 2.52 before treatment, 9.87 ± 1.74# after treatment), HbAlc (9.03 ± 1.31 before treatment, 7.27 ± 1.25* after treatment). After treatment, 2hC-P in glimepiride group decreased, while that in glibenclamide group increased. The difference between the two groups was statistically significant.

However, the results shown in table 1 show the changes in the glimepiride group and glibenclamide group after 12 weeks of treatment. There were no significant differences in f-c-p, 2hc-p and BMI between the two groups before and after treatment, so there was no statistical significance between the two groups.
### Table 1 Changes of Metabolic Indexes of Glimepiride Group and Glibenclamide Group Before and After Treatment

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>fc-p</th>
<th>2hc-p</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before Treatment</td>
<td>After Treatment</td>
<td>Before Treatment</td>
</tr>
<tr>
<td>Glimepiride</td>
<td>92</td>
<td>0.52±0.23</td>
<td>0.52±0.21</td>
<td>2.03±1.21</td>
</tr>
<tr>
<td>Glibenclamide</td>
<td>58</td>
<td>0.57±0.24</td>
<td>0.58±0.23</td>
<td>2.06±1.31</td>
</tr>
</tbody>
</table>

### 4 Discussion

Although experiments have shown that glimepiride is effective in type 2 diabetes, however, this drug also has some adverse reactions. Every medicine has its poison. The glimepiride occasionally causes allergic or pseudo allergic reactions, such as hives or rashes. These mild reactions can lead to breathing difficulties, lower blood pressure, and even shock, which in some cases may be life-threatening. Therefore, this drug should be further studied. And research into other drugs continues.

### References:


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