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Impact of Active Algorithmic Versus Usual Titration of Basal Insulin on Glycemic Control in Patients with Type 2 Diabetes in Nurse Clinic Setting

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Introduction

Optimizing glycemic control is crucial to prevent or delay the diabetes complications. Combination treatment of insulin with oral antidiabetic agents (OAD) can improve glycemic control. Studies to date have shown that aggressive forced titration of basal insulin can attain the targeted glycemic goals

Objectives

To evaluate the effectiveness of active basal insulin titration by employing a structured approach in helping the insulin-naïve type 2 diabetes (T2DM) patients.

Methodology

A pre-post test design controlled with subjects of which on usual insulin titration as per protocol was adopted in this pilot study. T2DM patients aged 18-75 years old initiated on insulin for the first time in the form of supplementary insulin due to secondary OAD failure or due to other concomitant illness rendering OAD treatment unsafe were recruited in 2014. A 16-week structured-approach programme- “3+4” of which consisted of 3 telephone calls and 4 face to face visits were arranged. Diabetes nurses would review patients’ home blood glucose results and titrate insulin according to a pre-determined forced-titration algorithm. A group of subjects following usual titration guidelines, as retrieved from CMS records, was made as control group after controlling subjects’ duration of DM, the baseline HbA1c and age. Outcome measures included a change in Glycosylated Hemoglobin (HbA1c) and fasting plasma glucose (FPG) levels and hypoglycemia events. Analysis of Variance and Student’s t test were employed to estimate the between-group differences.

Result

A total (N=31) subjects as intervention group were recruited, and a control group with subjects (N=31) were compared. Significant absolute HbA1c changed was observed in the intervention group (8.77 ± 0.81% at 0 weeks to 7.51 ± 0.66% at 16 weeks, p <0.008), as well as the control group also had significant reduction (8.65 ± 0.71% at 0 weeks to 8.13 ± 0.75 % at 14 weeks, p <0.008), however, the HbA1c reduction with no statistically difference between the two groups (-1.25% intervention group vs. -0.52% control group, p=0.09). For the FPG, in the intervention group (10.1 ± 0.99mmol/L at 0 weeks to 7.01 ± 0.87mmol/L at 16weeks, p <0.001) while within the control group, no statistically difference (9.41 ± 0.81mmol/L at 0weeks to 7.8 ± 0.77 mmol/L at 16weeks, p =0.084). Also, there was no statistically difference between the two groups. As for hypoglycemia events, no severe hypoglycemia events were reported from the two groups. Conclusions: Encouraging glycemic control improvement was observed within the intervention group in this study. The statistically insignificant between-group differences might be attributed to the small sample size. In view of the noteworthy findings, this structured-approach active early insulin titration programme merited continuous study for better patient outcomes management.