Early Weight Loss with SGLT2i and Prediction of 1-year Weight Loss in Thai Patients with Type 2 Diabetes Mellitus

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Background: Apart from glycemic control, sodium-glucose co-transporter 2 inhibitors (SGLT2i) offer the potential benefits of weight loss from calorie loss through glycosuria. However, our previous real-world data revealed that weight loss gradually rebounded after the first 6 months and then backed to baseline body weight after one year, while maintaining glycemic control beyond one year. Whether early response in weight reduction from SGLT2i could predict long-term weight reduction is unknown.

Objective: To examine whether early responders (ER) in term of weight reduction from SGLT2i could predict long-term weight reduction at 1 year and to describe characteristics of patients who achieved long-term weight reduction compared with those who could not maintain weight reduction (early non-responders, ENR).

Methods: Using our previous real-world data in patients with type 2 diabetes who had been treated with SGLT2i, we performed a post-hoc analysis by defining ERs as those who achieved weight loss of ≥5% at 3 months. The ability to predict response status at 1 year was evaluated by the positive predictive value (PPV; proportion of patients with an early response who had ≥5% weight loss at 1 year) and the negative predictive value (NPV; proportion of patients with an early non-response who had <5% weight loss at 1 year). The success criteria of weight loss of ≥3 kgs were also examined.

Results: A total of 189 patients with diabetes (female 50.3%, mean age 59.9±12.3 years, duration of diabetes 16.3±9.2 years, baseline BMI 29.9±6.1 kg/m2, baseline A1C 8.8±1.6%) were prescribed SGLT2i during 2014-2016. A post-hoc analysis was performed in 104 patients who had serial data after 3 months. At last follow-up (median time16 months), overall median HbA1c reduction and weight reduction when compared to at baseline were 1.0% and 1.5 kg, respectively. At 3 months, 24.0% (25/104) achieved weight loss of ≥5% and 34.6% (36/104) achieved weight loss of ≥3 kgs. Baseline characteristics in the ER and the ENR groups appeared similar in both groups. The proportion of ER losing ≥5% of their bodyweight at 1 year was only 54.5% (12/22) and the proportion of ER losing ≥3 kgs at 1 year was only 48.6% (18/37). By using criteria of the achieved weight loss of ≥5% at 3 months, PPV and NPV were only 0.55 and 0.84, respectively. The change in bodyweight was only weakly correlated with the change in A1C from baseline to the last follow-up period.

Conclusion: Our data demonstrated that an early response in weight reduction to SGLT2i treatment cannot predict long-term weight loss benefits at 1 year. From a clinical perspective, this anticipated anti-diabetic agent with the benefits for weight reduction should be re-considered in routine patients, which are much more diversify than those in clinical trials. Further studies are recommended towards a better understanding of responders versus non-responders for weight reduction effects of SGLT2i.

Keywords: SGLT2 inhibitors, Weight loss, Responders