Diabetology

Extended Abstract

Is it Time to Review the Role of Continuous Glucose Monitoring Systems in Diabetes Management? - Le Minh Quang - City International Hospital Ho Chi Minh City, Vietnam

Le Minh Quang

Abstract

Hemoglobin A1C (HbA1c) and self-monitoring of blood glucose (SMBG) are widely used as standardized measurements in diabetes management. HbA1c is a measure of the mean blood glucose level over a period of 8-12 weeks. This index is easy to measure, relatively inexpensive and internationally standardized. HbA1c helps to predict the complications, particularly microvascular complications in patients with diabetes [1]. However, because HbA1c represents only an average measure of glucose levels, it does not provide glycemic variability (GV), glucose excursions or hypoglycemia. Hypoglycemia and GV ultimately are major challenges during optimization of glycemic control. GV is associated with an increased risk of adverse cardiovascular (CV) outcomes and diabetic retinopathy. There are many factors that affect GV including diet, physical activities, patient health status and therapeutic regimen. On the other hand, there are certain conditions and factors such as renal failure, anemia or hemoglobinopathies that can alter the accuracy of HbA1C result .

Current viewpoints in diabetes care emphasize personalized treatment plan for each individual to provide an excellent quality, to improve patient experience, and to minimize the burdens of daily living with diabetes. Many current guidelines indeed recommend an optimal glucose control consisting of an HbA1C level ~7% (but personalized for each individual) with less GV and severe hypoglycemic events as much as possible [3].

SMBG for long is also an accurate measure of capillary glucose levels that is relatively inexpensive and easy to use. SMBG can improves blood glucose control. However, SMBG have many limitations such as representing only a single point value of glucose, no indication of the trend or rate of glucose level change, multiple daily testing required that increase the daily burden and unable to detect nocturnal and unawareness hypoglycemic events The dramatically emergence of continuous glucose monitoring (CGM) systems has potentially become one of the disruptive innovations that change the way we manage the

Le Minh Quang
City International Hospital Ho Chi Minh City, Vietnam, E-mail: niveendaoud@gmail.com

patients with diabetes. CGM systems are measured glucose readings in the interstitial fluid continuously throughout whole day. The glucose readings display in real-time manner including not only glucose levels but also the trends that can help patient and health care provider (HCP) make interventions before the events happen.

There are many research and analysis that show the benefits of CGM in patients with type 1 (T1D) and type 2 diabetes (T2D). Twenty-seven randomized controlled trials (RCTs) assessing the outcomes of CGM use in 3,826 patients have been published.

Compared to conventional HbA1c and SMBG measurements, CGM provides more valuable information including a continuous and real-time glucose monitoring, detection of GV and number and time of hypoglycemia as well as hyperglycemia. CGM can help to minimize severe or nocturnal hypoglycemia, especially in patients with hypoglycemic unawareness; CGM resulted in better glycemic control than conventional treatment and reduce the mean amplitude of glycemic excursion in persons with diabetes. CGM reduces importantly HbA1c levels, increase time in range and reduce incidence and time spent with hypoglycemia. In addition, CGM can be used as a valuable tool for patient education of self-management and help patients to personalize their management strategies

Evidence from the studies and meta-analysis have shown that the application of CGM in patients with diabetes has been beneficial in glycemic control, reduction of hypoglycemia and hyperglycemia events, HbA1c reduction and improvement of quality of life. CGM use in combination of HbA1c monitoring obviously help to achieve a better optimal and stable glycemic control as well as to build patient confidence in self-management with a useful monitoring tool. While the use of CGM is drastically increasing, there are barriers including the absence of international guidelines on CGM use, the cost or reimbursement issues, frustration over adherence, the complexity of technology and the lack of accuracy needed to have proper solutions for enhancing routine use of CGM in patients with diabetes.

This work is partly presented at 52th Annual Congress on Neuroscience and stroke 2020, December 14, 2020