The Role of Insulin Lispro in Optimal Diabetes Management

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Insulin lispro is currently available for patients who have uncontrolled diabetes as a benefit under the Saskatchewan Prescription Drug Plan (SPDP) Exceptional Drug Status (EDS) program. Recent concerns over the risks associated with prolonged uncontrolled diabetes and the benefits of intensive treatment regimens make it apparent that patients would benefit from using insulin lispro when starting insulin therapy.

There is much evidence supporting the fact that two hour postprandial glucose levels are good predictors of A_{1C}, and that A_{1c} is a good predictor of complications associated with diabetes.[1] The 2003 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada state that insulin lispro, in combination with adequate basal insulin, is preferred over regular insulin to achieve postprandial glycemic targets and improve A_{1c} while minimizing the occurrence of hypoglycemia.[1] Insulin lispro has a shorter time to peak serum insulin level which more closely resembles physiologic secretion of insulin, and results in a greater relative reduction of postprandial blood glucose .[2] Due to the difficulty in coordinating doses of regular insulin with meals, its use has not been beneficial in resolving postprandial hyperglycemia.[3]

An increasing number of type 2 patients will need to be started on insulin to achieve an A_{1c} of < 7%. The more stringent glycemic goals that are now being recommended will not easily be reached unless the postprandial glucose rise is controlled.[3] Patients who are started on regular insulin may go months with inadequately controlled blood glucose levels before they are switched to insulin lispro.

Although insulin lispro is more expensive on a unit to unit basis than regular insulin, cost-savings in the long term are beginning to become apparent. A cost and utilization comparison by Hall et al showed that insulin lispro subjects had, on average, significantly fewer inpatient hospitalizations compared to regular insulin subjects.[2] Insulin lispro subjects also had a significantly lower average number of hypoglycemia-related hospitalizations during the follow-up period.[2]

Insulin lispro needs to be made available to patients as first line therapy, especially newly diagnosed Type 1 diabetics. As Type I patients are often children and the diagnosis is overwhelming for both the child and parents, a little consistency can go a long ways. From diagnosis the pediatrician must introduce treatment in the least traumatic way possible so the child does not perceive a derangement of his/her life.[4] Rather than having to learn the regimen with regular insulin initially and then be switched to insulin lispro months later, receiving lispro immediately will make it easier for the patient to settle into the routine that they will likely follow indefinitely.

In Type II diabetics, many patients have difficulty attaining the recommended A_{1c} goal despite normal/near-normal fasting plasma glucose levels; thus, pharmacologic treatment targeting postprandial plasma glucose levels may prove beneficial.[5] An analysis of glucose profiles and A_{1c} in the DCCT indicated that fasting plasma glucose alone should be used with caution as a measure of long-term glycemia. Fasting plasma glucose levels tended to progressively underestimate A_{1c} at increasing plasma glucose levels. The data also suggests that post-meal plasma glucose contributes appreciably to A_{1c}; however, all post meal times are not equal in their contributions.[6]

The American College of Endocrinologists (ACE) and the American Association of Clinical Endocrinologists (AACE) recommend routine assessment of and lower targets for both preprandial (<6.1mmol/L) and 2-hour postprandial (<7.8 mmol/L) plasma glucose concentrations for optimal reduction of A_{1c} levels.[5] They also have recently recommended a target A_{1c} of 6.5%. This, along with the Canadian Diabetes Association's support for using insulin lispro in improving A_{1c}, should suggest to the reader that insulin lispro is increasingly being, and needs to be, used first-line for patients requiring insulin therapy. The SPDP needs to support the immense challenges faced by diabetics by recognizing the significant beneficial effect insulin lispro could have on a patient. Making insulin lispro available to the patient as a formulary product will benefit both the patient and the province, not only clinically and economically, but also in terms of patient satisfaction and quality of life.

References

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