MEDIBEATS
The Medical Bulletin

In Critical Care

1.The impact of each insulin product on the blood glucose (BG) profile is determined by its pharmacokinetic/ pharmacodynamic profile. Basal insulins have long durations of action and minimal peak effects, providing consistent insulin levels to help manage BG during periods of fasting. Bolus insulins have rapid onsets and short durations of action and are typically used to cover meals or correct high BG levels.

2. The approach to insulin therapy differs between T1D and T2D. Treatment of T1D typically requires intensive insulin therapy with either multiple daily injections of insulin or an insulin pump. In contrast, in T2D, insulin is typically added in a stepwise fashion when glycemic goals are not met with noninsulin medications.

3. Common adverse effects of insulin include hypoglycemia, weight gain, injection-site reactions, and lipohypertro- phy. Appropriate counseling on the prevention, detection, and treatment of hypoglycemia; lifestyle measures to minimize weight gain; and appropriate insulin injection technique can help mitigate these adverse effects.

4. Numerous factors must be considered when selecting an appropriate insulin product, including diabetes type (T1D vs. T2D), pharmacokinetic/pharmacodynamic properties, total insulin requirements and degree of insulin resistance, number of required injections, and affordability.

5. Noninsulin options for the treatment of T2D include metformin, sulfonylureas, meglitinides, bromocriptine, alpha-glucosidase inhibitors, thiazolidinediones, glucagon-like peptide-1 (GLP-1) receptor agonists, dipeptidyl peptidase-4 (DPP-4) inhibitors, and SGLT-2 inhibitors. Decisions about which to add should depend on whether the person has ASCVD, HF, or CKD, in addition to other individual and drug considerations, such as glycemic efficacy, risk of hypoglycemia, effect on weight, ease of use, mechanism of delivery, cost, and side effects.

6. The most common side effect of metformin is diarrhea. This side effect is usually transient and can be minimized by starting at a low dose (500 mg once daily) and titrating the dose slowly over time to a target dose of 2000 mg daily (usually 1000 mg twice daily), taking the medication with food, and using the extended-release formulation.

7. Certain SGLT-2 inhibitors and GLP-1 receptor agonists have beneficial effects in people with T2D and ASCVD or ASCVD risk. Empagliflozin, canagliflozin, liraglutide, dulaglutide, and semaglutide have demonstrated significant reductions in major adverse ASCVD events (MACE; a composite of CV death, nonfatal myocardial infarction, and nonfatal stroke) in CV outcome trials.

8. Certain SGLT-2 inhibitors and GLP-1 receptor agonists have beneficial effects in people with T2D and CKD. Both classes can delay the onset and progression of CKD.

9. Some SGLT-2 inhibitors have beneficial effects in people with T2D and HF; SGLT-2 inhibitor use in these individuals may decrease hospitalizations for HF and CV death.

10. Precise mealtime insulin dosing requires accurate carbohydrate counting and an appropriate carbohydrate- to-insulin ratio (C:I ratio) that produces premeal to 2-hour postmeal BG excursions of 30 to 50 mg/dL.

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