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Insulin Glulisine

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Postprandial hyperglycaemia is an important contributor to glycosylated haemoglobin (HbA_{1c}) and may be linked to cardiovascular mortality. Rapidly absorbed insulin analogues have a critical role in managing postprandial glucose levels.

Insulin glulisine is a new rapid-acting human insulin analogue, similar in action to insulin lispro and insulin aspart. From the current data, the clinical properties of insulin glulisine appear very similar to those of insulin lispro and insulin aspart, with similar effects on HbA_{1c} levels. Insulin glulisine is superior to regular human insulin (RHI) in lowering postprandial glucose, but similar to the other analogues. Studies using insulin pumps and in paediatric patients support the use of insulin glulisine in these situations. Adverse effects are comparable as described in the review in this issue. There were some minor differences in certain clinical areas, including a reduction in total insulin dose as compared with insulin lispro and some possible benefits in obese subjects. These differences need further studies to determine clinical implications.

While the current data show clinical comparability between insulin glulisine and other rapidly absorbed analogues, there may be some differences in basic properties. First, as with insulin lispro and insulin aspart, insulin glulisine shows no evidence of mitogenic risk. Binding to the insulin like growth factor 1 receptor is the same as with RHI and direct studies on mitogenesis show that insulin glulisine and RHI are identical in this respect.

In addition, insulin glulisine has basic properties that could have clinical benefit. First of all, insulin glulisine activates the insulin receptor substrate-2 mediator. This has potential benefits for preservation of islet cell function and data suggest a possible clinical benefit. Studies are required to prove or disprove this potential advantage. Another property is reduced degradation of insulin glulisine by cells. This is not evident in pharmacokinetic studies in humans, but currently available data may not reflect minor changes in clearance in the whole human.

In summary, insulin glulisine is a new addition to the group of rapidly absorbed insulin analogues. As such, insulin glulisine provides another choice for postprandial glucose control. Further data are required to determine possible advantages of this new agent over the currently available analogues, but increased control of postprandial glucose levels has clinical implications in improving diabetes care. Other benefits could be preservation of β-cell function or improved action on lipid and protein metabolism. The clinical properties of this new agent will need monitoring to assess its potential benefit. ▲