Use Of U200 Insulin Degludec (Tresiba) And Metformin In An Adolescent With Type-1 Diabetes-mellitus

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BACKGROUND

- Insulin dose requirements are higher during puberty and in overweight/obese individuals with type 1 diabetes mellitus (T1DM) due to insulin resistance.
- Through meta-analysis metformin has been shown to be beneficial as adjunctive therapy in T1DM adults independent of body mass index (BMI).
- The large volumes of insulin required to administer higher insulin doses in insulin-resistant individuals have adverse effects on insulin absorption.
- Insulin degludec (Tresiba) U200 preparation allows lesser volume administration for the same dose.

AIM

To describe a 16-year-old girl with T1DM whose basal insulin requirement decreased markedly when switching to insulin degludec (Tresiba) U200 with the addition of metformin.

CLINICAL CASE

- The patient was diagnosed with T1DM at the age of 5 years. GAD and islet cell antibodies were positive. HbA1c at diagnosis was 89mmol/mol.
- Initial management was with multiple daily insulin (MDI) injections. At age 9 years she switched to continuous subcutaneous insulin infusion (CSII).
- At age 15 years she chose to change back to MDI due to recurrent skin abscess formation, secondary to chronic staphylococcal aureus colonisation.
- The patient increased her basal insulin detemir (Levemir) doses from 0.6 U/Kg/day up to 1.9 U/kg/day over 8 months following the switch from CSII. The detemir was given in two divided doses. During this period HbA1c increased slightly from 58 to 64 mmol/mol and BMI increased from 23.4 to 24.8 kg/m². There were no episodes of ketoacidosis.
- She was trialed on insulin degludec (Tresiba) U200 at 30% reduced dose (1.3U/kg/day) with addition of modified release metformin.
- Over the first 4 weeks following switch, due to recurrent hypoglycaemia, her basal insulin requirement reduced further to 0.7U/kg/day (60% reduction in basal insulin dose). 5 months later her insulin requirement remains at 0.6U/kg/day; HbA1c is 60mmol/mol and her BMI is 25.9kg/m².

CONCLUSIONS

- Insulin degludec U200 preparation can be useful in T1DM patients requiring high basal insulin doses.
- Metformin is a useful adjuvant therapy in post pubertal T1DM patients with insulin resistance.
- Close monitoring is required over first weeks of therapy with insulin degludec (Tresiba) and metformin.

REFERENCES

3. Kusunoki Y et al. Effects of Switching from Insulin Glargine or Detemir to Insulin Degludec in Patients with Type 1 Diabetes Mellitus. Diabetes Ther (2013) 4:461–472