

Falling Insulin Requirements in Late Pregnancy: Marker of Placental Dysfunction or Benign Phenomenon?

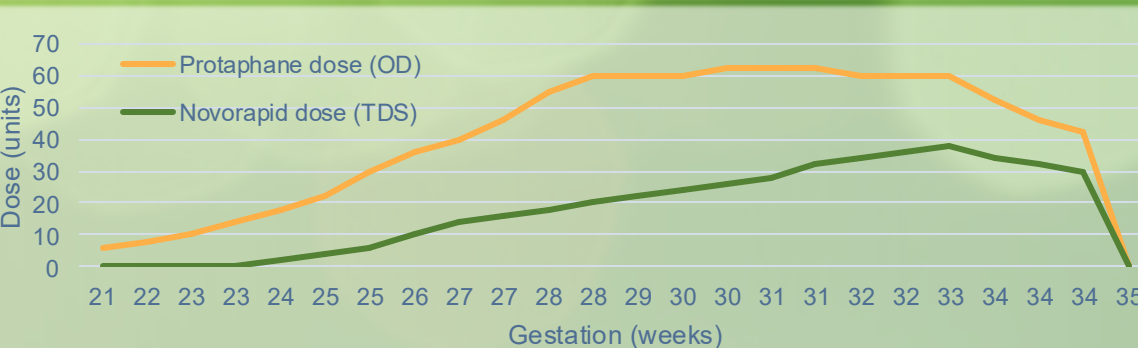
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Background

Insulin requirements typically increase throughout pregnancy due to progressive placental insulin resistance. Unexpected reductions in insulin requirements are uncommon and have been associated with placental dysfunction, including fetal growth restriction and stillbirth. Distinguishing physiological improvement in insulin sensitivity from pathology presents a significant clinical challenge.

Case

A 29-year-old G1P0 woman presented at 34+3 weeks gestation with recurrent symptomatic hypoglycaemia despite progressive reductions in insulin therapy for gestational diabetes mellitus. She reported multiple hypoglycaemic episodes over several days, including seven episodes within one day and one while driving. Her pregnancy was otherwise complicated by obesity (BMI 37.3 kg/m²) and insulin-treated gestational diabetes. Ultrasound at 32 weeks demonstrated an appropriately grown fetus (estimated fetal weight 70th centile) with normal amniotic fluid volume and umbilical artery Doppler studies.



Changes in insulin doses throughout pregnancy.

Management

The patient was admitted for multidisciplinary care involving clinicians from Obstetrics, Obstetric Medicine and Maternal Fetal Medicine. Management included:

- Inpatient glucose monitoring
- Progressive reduction and eventual cessation of insulin therapy
- Serial cardiotocography
- Repeat ultrasound assessment of fetal growth and wellbeing
- Maternal investigations including cortisol and adrenocorticotrophic hormone testing
- Consultation with Maternal-Fetal Medicine

Outcome

Serial fetal surveillance remained reassuring throughout admission, with normal fetal growth, Doppler studies and cardiotocography. No evidence of placental insufficiency was identified. The patient subsequently underwent delivery at 38+0 weeks, resulting in the birth of a healthy infant weighing 3240g with Apgar scores of 9 and 9.

Discussion

Falling insulin requirements during late pregnancy are uncommon and may reflect improving maternal insulin sensitivity or placental dysfunction. Although previous studies have demonstrated an association between falling insulin requirements and adverse perinatal outcomes, evidence remains conflicting, and no consensus exists regarding optimal management.

This case demonstrates the importance of recognising recurrent hypoglycaemia as a potential marker of placental dysfunction while emphasising that reduced insulin requirements alone do not necessarily indicate fetal compromise. Multidisciplinary assessment and enhanced fetal surveillance enabled safe expectant management until term.