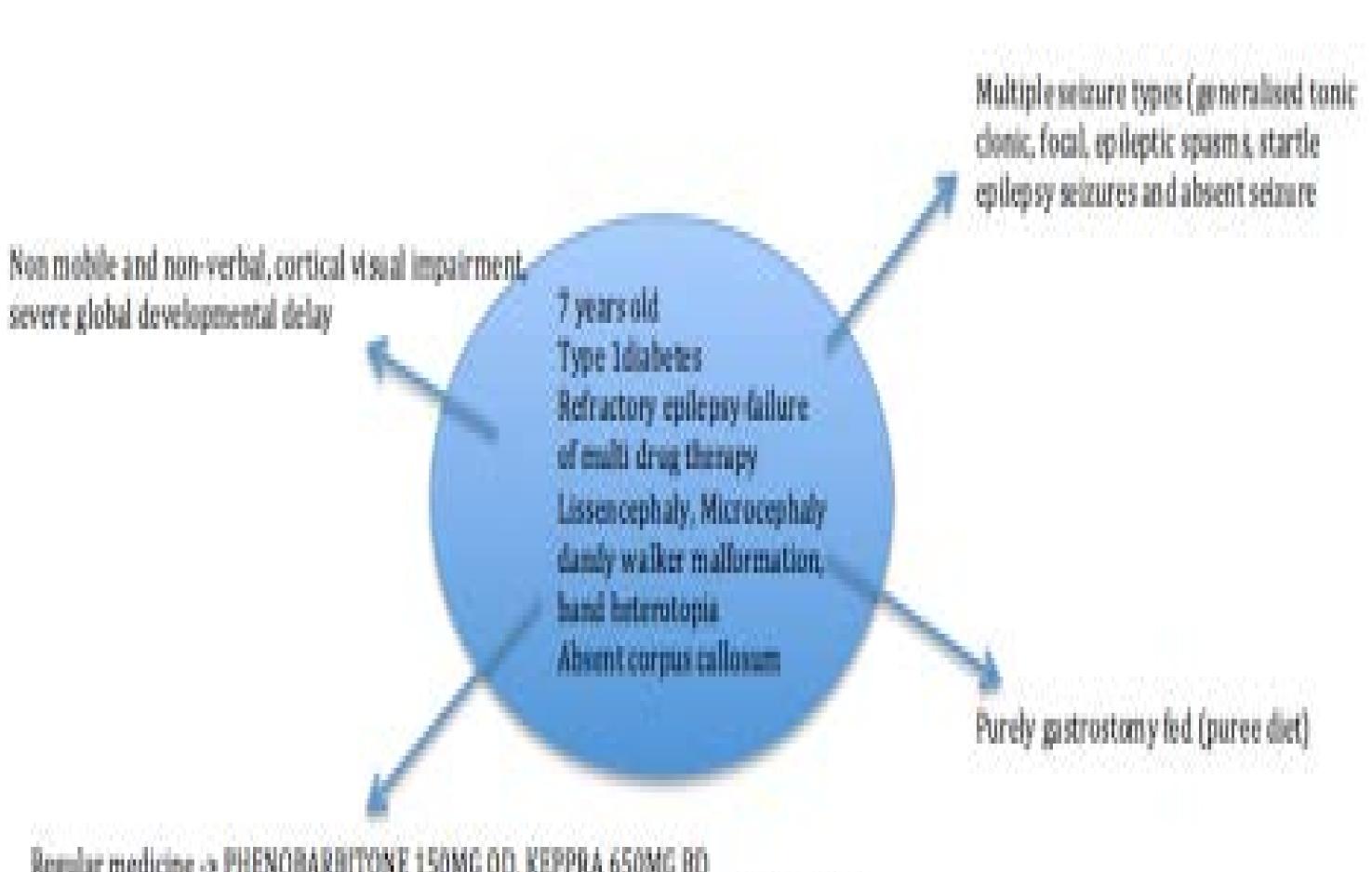
Ketogenic diet in a child with diabetes and global developmental delay Dr Myat su win ,Dr Rajiv Goonetilleke (Hinchingbrooke Hospital)

Introduction

- Used effectively in type two diabetes, epilepsy in diabetes, pyruvate dehydrogenase deficiency
- Challenging in achieving ketosis without DKA
- The high fat diet regimen of the ketogenic diet (70-90% of calories)



Regular medicine -> PHENOBARBITONE 150MG OD, KEPPRA 650MG BD Lansopraziole 15mg OD, Colomycin nebuliser 1million unit bid, Novo rapid via Medironic pump

Chloral prn, Continuous glucose monitoring sensor augmented pump therapy (Medtronic smart guard)

Ketogenic diet plan

- 3x amino acid mix 200g
- 930 kcal/day, 24g protein, 90g CHO, 60g LCT
- If medicine >1G of CHO -> add to diet
- Aim for ketone level 2-3 –achieved in 5 weeks
- On ketogenic diet for 4 months

Daily Management

- Check ketone 4 times per day
- At home Optimum Neo (Abbott) or Glucomen Aero 2K meter
- Blood gas weekly
- Support day-to-day management including sick day management

Signs and symptoms of ketosis

- rapid, panting breath ('Kussmaul' breathing)
- increased heart rate
- facial flush
- irritability
- vomiting
- unexpected lethargy
- Important: Excess ketosis may also mimic non-convulsive status as the children are often less responsive

Signs and symptoms of ketosis present without acidosis (Ph < 7.3 and HCo₂ < 18mmol/l)

Blood ketones >3.1mmol/L

Not dehydrated Tolerate fluids enterally

dehydrated, unable to tolerate fluids IV fluids as 0.9 Saline, 5 % Glucose with 20mmol KCL Per500ml bag and start IV insulin sliding scale Temporary basal rate on insulin pump

Give 5 g carbs i.e 50ml of fruit juice (Contains 5g CHQ) or 20ml Glucojuice

Wait for 15-20 minutes

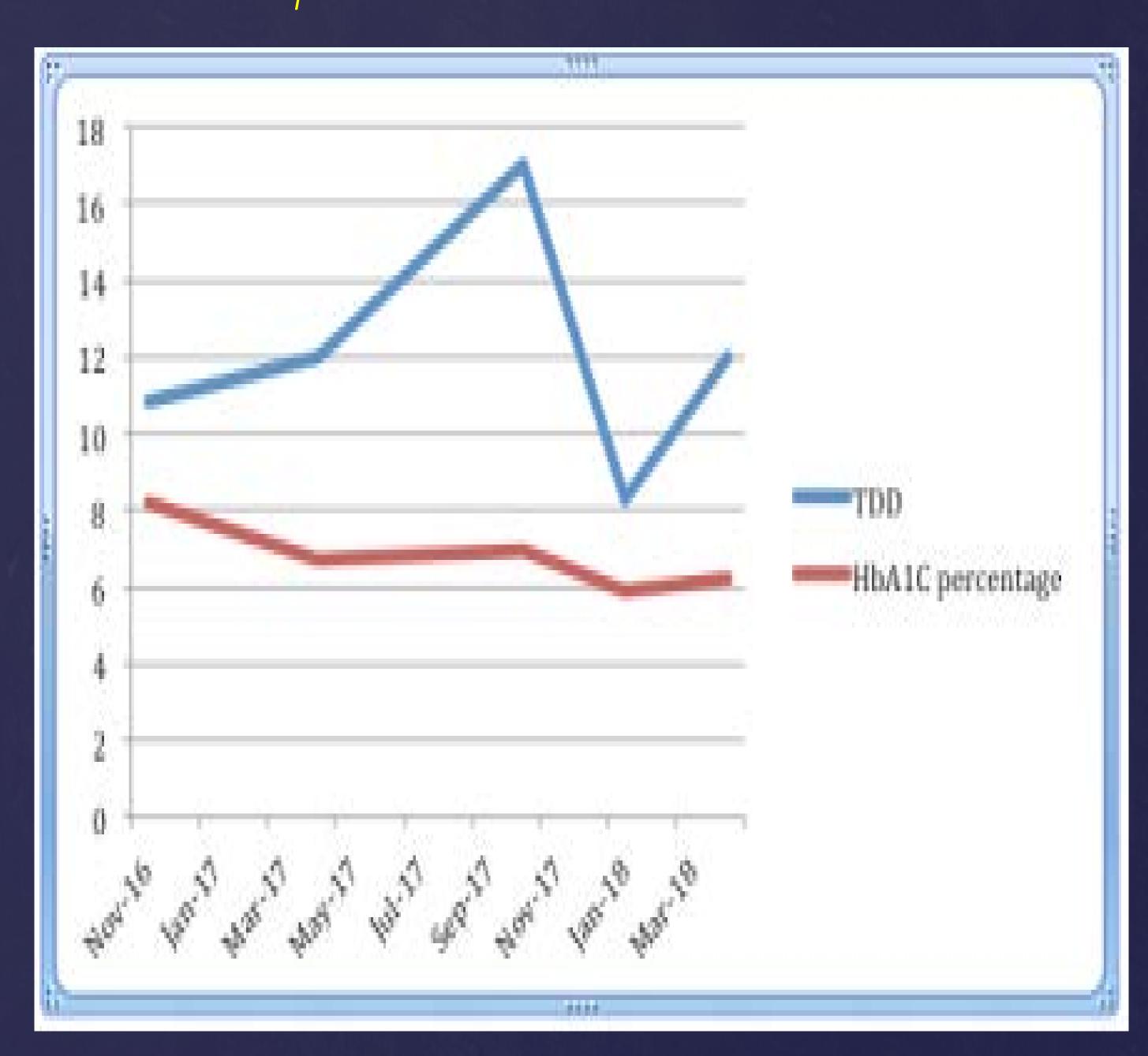
If the symptoms/ketones persist

Ketones over 3.1 mmol/l

Venous blood gas -> acidosis

Treat as DKA Inform the dietitian

Effects on total daily dose and HbA1C



Challenging factors

Limited resources / literature

To achieve ketosis without acidosis

Preventing hypoglycemia

Non verbal \rightarrow dependent on identifying clinical symptoms to ensure consistency and safety

DISCUSSION

- Ketosis without acidosis and achievable by careful monitoring
- Helps in controlling HbA1C level
- There is reduction in total daily dose of insulin