

# Diabetic ketoacidosis in childhood (case discussion)

Gács, Zsófia

## **The 4 Ts**

toilet

thirsty

tired

thinner

+ abdominal pain, vomiting, intercurrent infection, shortness of breath, confusion, fruity smell - *differential diagnosis* (metabolic/respiratory acidosis, asthma, pneumonia, acute abdomen, gastroenteritis, UTI)

## **Pathophysiology**

- insulin deficiency

- impaired peripheral glucose uptake + no 'new' glucose from liver - fasting cells *tired, thinner* - fat burning - ketone bodies - *fruity smell, metabolic acidosis* --- *respiratory compensation: Kussmaul breathing*

- renal threshold for glucose reabsorption - *glucosuria - polyuria (toilet) - dehydration - polydipsia - thirsty*

## **Laboratory tests**

blood glucose- urinary glucose + ketone

blood gas

(HgbA1C, insulin, C peptide, antibodies)

## **Therapy**

monitoring (GCS, urine, blood glucose, blood gas...)

*fluid* : initial resuscitation 10 ml/kg isotonic saline in 30-60 mins + consider dehydration (8%!) - glucose containing fluid (!) if glucose  $\sim$ 14 mmol/l

*insulin* only after 1. hr - 0.1 U/kg/h - glucose falling 2-3 mmol/l/hr - lower if quicker! but not less than 0.05 U/kg/h

*potassium* -must

*bicarbonate* - not (except)

*CAVE! cerebral edema* - newly diagnosed DM, rapid change in osmolarity (too active therapy), initial pH, bicarbonate