

## Background

- Multiple organ failure syndrome (MOFS) can occur in diabetic ketoacidosis (DKA).
- In DKA, rhabdomyolysis is thought to be secondary the changes in electrolyte and glucose concentration across the muscle cell combined with the presence of insulin.
- These changes may lead to increased intracellular calcium which, in turn, can activate proteases and lead to muscle cell leakage.

## Objectives

- A 6-year old female child had DKA and MOFS.

## Methods

- We presented a case study of a child with DKA and MOFS, treated in Vietnam National Children's Hospital (NCH).

## Results

- A 6-year old female child had 1-week history of excessive thirst, polyuria, polydipsia, and weight loss.
- She was admitted to NCH on 23<sup>rd</sup> Dec 2015.
- In history:
  - D7: she had excessive thirst and urination, weight loss, and feeling fatigue.
  - D1: she felt more fatigue. In a local hospital, she was transfused 1000ml NS. After that, she had multiple episodes of emesis, then she was lethargy with glucose level of 33.5 mmol/l. She was diagnosed of DKA and transferred to NCH
- On admission to NCH, she had tachypnea, unconsciousness with Glasgow score of 5, pupils 3mm, reflex to light, hypovolemic shock (tachycardia 147 pm, weak pulse, Refill 4 s, BP: 50/30 mmHg), severe dehydration (dry skin, extremely sunken eyes), no urine out put
- Investigation: glucose lever was 32.2 mmol/L (max 64.5 on admission); metabolic acidosis with pH of 6.8; hypernatremia with sodium level of 162 mmol/L; ketonuria and glucosuria; HbA1C of 12.1%; low C-peptide of 0.001ng/ml; increased liver enzymes with GOT and GPT of 470 U/L and 188 U/L, respectively; renal failure with urea and creatinine of 27.9 mmol/L and 318 Mmol/L, respectively; rhadomyolysis with CK of 29642 U/L; myoglobinuria.

Conflicts of interest: None declared;

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## Results

- Blood osmotic pressure: 388 osmol/l
- She was diagnosed of DKA, DM1, and MOFS.
- Intervention and treatment
  - Intubation
  - DKA treatment
  - Dopamin 10ug/kg/ph
  - CVVH (Continuous Veno – Venous Hemodialysis):24 Dec 2015 → 04 Jan 2016
  - Intermittent veno- venous hemodialysis: 04 Jan → 08 Jan 2016
  - Antibiotics for treatment infection
  - Other supportive care

**Table 1:** Progression of investiation

	23/12	24/12	25/12	28/12	31/12	3/1
Glucose	64.5.	14.7	16.9	11.3	8.5	
GOT	470.3	8259.2	9181	1500	281.4	260.8
GPT	188.3	3035.6	3423	821	320.5	234.6
Urea	27.9	14.7	32.3	4.4	4.4	4.9
Creatinin	318.6	225.0	403.5	52.5	78	85.6

- Liver enzymes were normalized on 10<sup>th</sup> Jan 2016, 1 week later than renal function.
- DKA and MOFS were cured. Renal function and liver enzymes were recovered.
- She was discharged from hospital without neurogenic sequalee.

## Conclusions

Hemodialysis is an appropriate treatment for a combination of DKA and MOFS.

## References

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