




COMPLICATED DKA

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- 9yrs male , previously normal child presented with
 - Fever -5days
 - Polyuria,polydipsia x 5 days
 - Vomiting, abdominal pain,lethargy- 4days
 - Breathlessness x 1 day



The initial physical examination showed

- GCS of 8
- Pupils unequal
- Tachycardia, Hypotensive Shock
- acidotic breathing (respiratory rate 80/minute)
- Capillary blood sugar – high

In emergency department


- After 40 ml/kg of NS bolus



Suddenly went for Apnea and Bradycardia



- CPR started, Adrenaline

- After CPR - had minimum spontaneous activity
 - Was still in hypotensive shock
 - Adrenaline infusion started
 - Intubated
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↓
- He had second cardiac arrest

CPR and adrenaline

ED . . 90 MIN



- Unresponsive
- Intubated, BAE+,
- Hypotensive shock


- NS 10ml/kg given(80ml/kg), Adrenaline 0.5µg/kg/min continued

- Shifted to PICU for further management

IN PICU



- Intubated, spontaneous efforts+
- Hypotensive shock
- Pupils-unequal, sluggish reaction
- Blood sugar - 420mg/dl .(sugars reduced with fluids alone)

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- Child had hypospadias.
 - Catheterised with difficulty..... anuric

PICU 2 HRS

- Ventilated
- Considering superadded sepsis hypotension → bolus continued (total-120ml/kg)
- 3%NaCl 5ml/kg bolus
- Adrenaline 0.5 $\mu\text{g}/\text{kg}/\text{min}$
- Wide pulse pressure → Noradrenaline 0.3 $\mu\text{g}/\text{kg}/\text{min}$
- Antibiotics

PICU 5 HOURS

- Pain responsive(E2VTM4)
- Pulse and BP improved



- Started on maintenance fluids NS 46ml/hr
- Insulin infusion started 0.05u/kg/hr (after shock correction as BP improved)

LAB VALUES

	ON ADMISSION	6 HOURS
UREA	68	89
CREATININE	1.5	2.4
Na	122	124
K	7.7	5.4
CBG	HIGH	412



□ Urea ,creatinine ↑



Peritoneal dialysis (5 days)

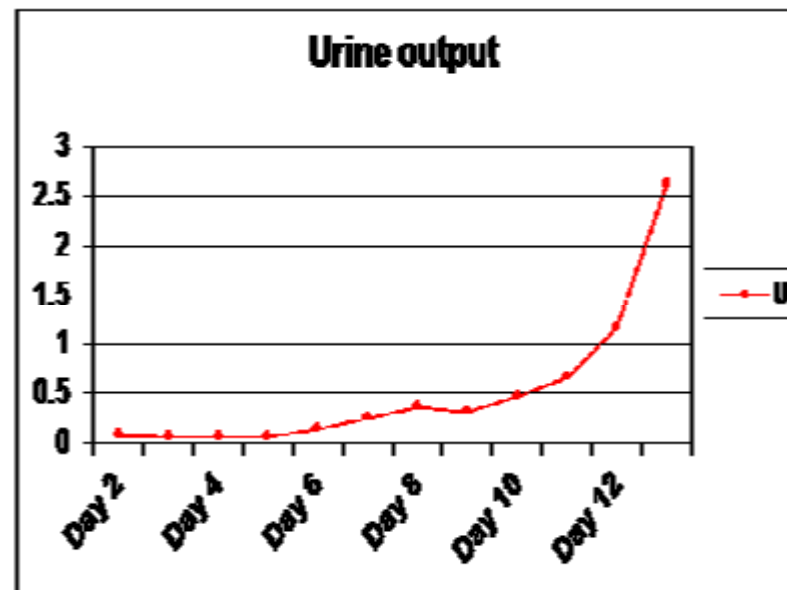
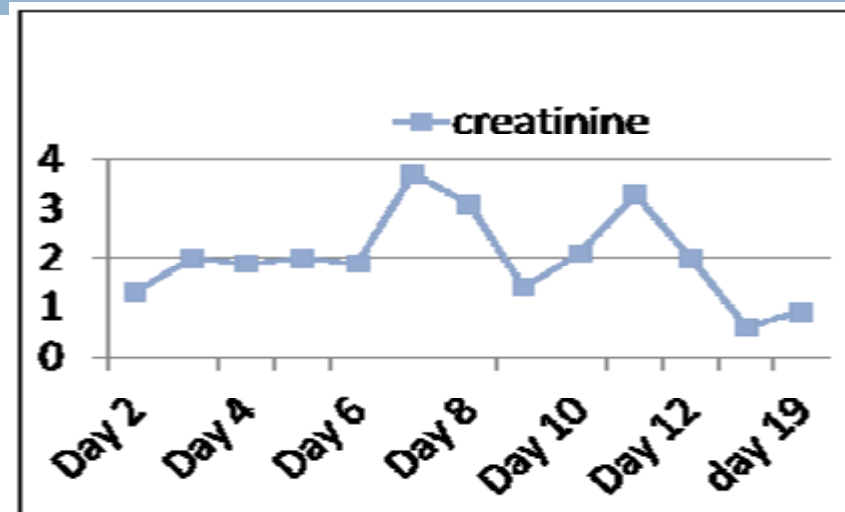
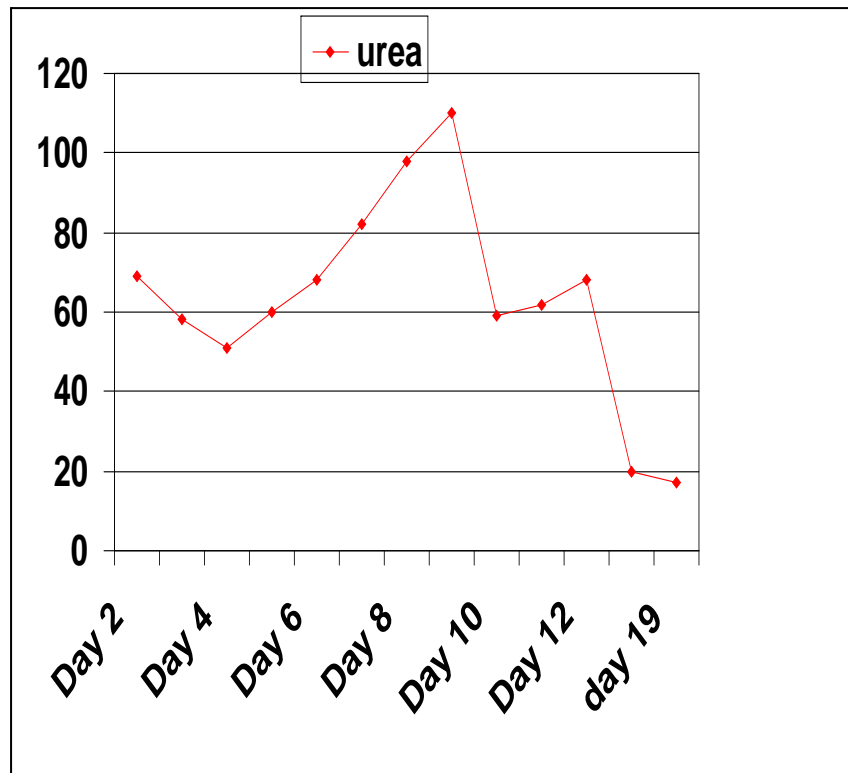


□ Initial improvement → rise in urea/creatinine



□ Hemodialysis done on day 7&9

Trend of Renal function

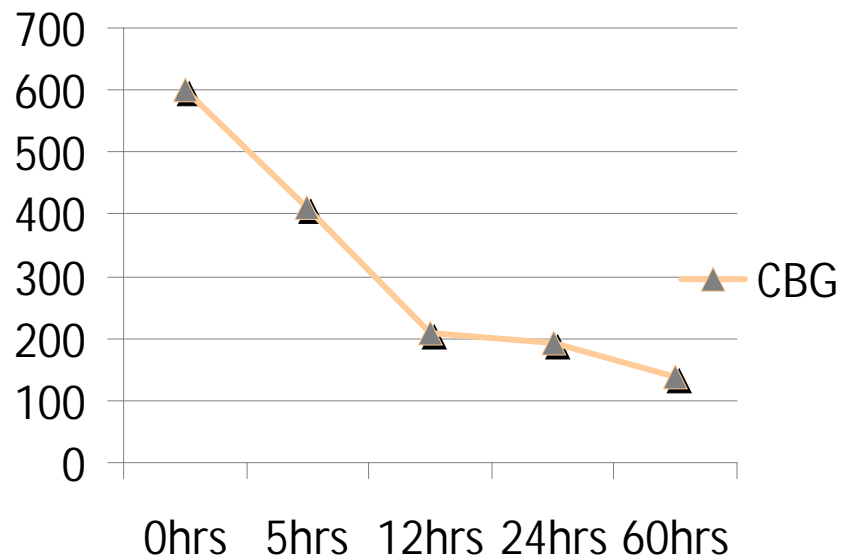
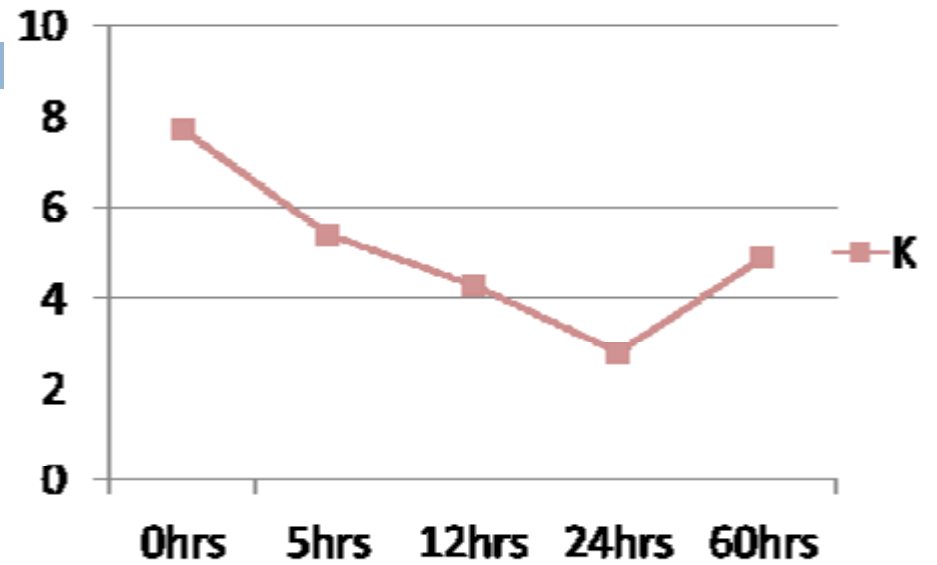
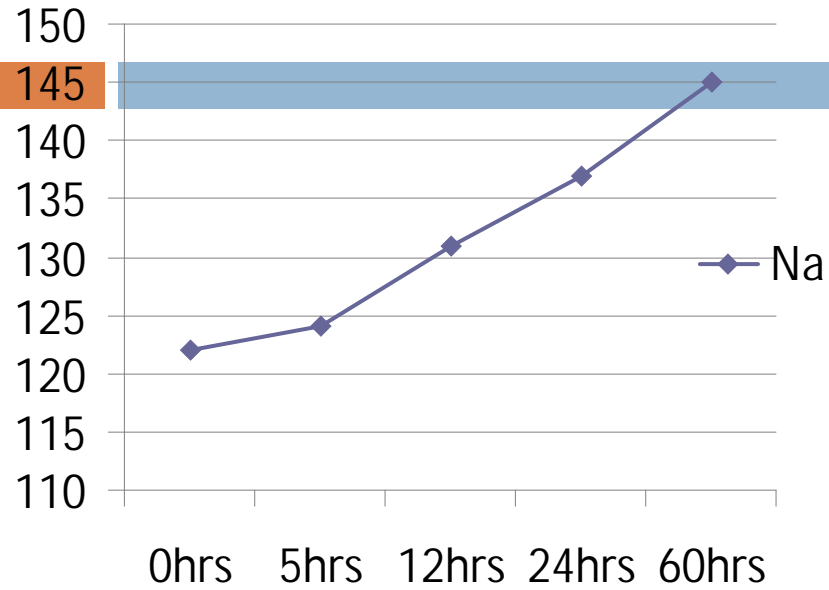


Peritoneal dialysis continued upto day 5(120 cycles)

Hemodialysis done on day 7&9


Given diuretics from day 12 for 3 days

Trend of Na, K, CBG



METABOLIC ACIDOSIS


	DAY 1	DAY 2	DAY 3	DAY 4
PH	7.0	7.29	7.47	7.37
HCO ₃	3.7	11.6	14	14.9
BP	60/40	90/60	90/60	100/70


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- Noradrenaline stopped on day 2
 - Adrenaline stopped on day 4
 - Extubated on day 4
 - SC Insulin ,Lispro 0.1u/kg every 3 to 4 hrs started on day 6 (he was on iv fluids till day 5)


OTHER INVESTIGATIONS

- CBC:TC-12,800,DC-P80,L15,E5.Hb-10.8,Plt-2.8L
- LFT: Bili-0.6, SGOT 76, SGPT 27,
Total protein-6.8, Albumin-3.0
- CPK - 5480U/L
- Creatine Kinase levels of > 5000 U/l is related to renal failure
- ? Rhabdomyolysis was noted during the course of DKA which probably contributed to the ARF

- Urine-high coloured, RBC+
- Total cholesterol -115,TGL 302
- PS Study: hypochromic, microcytic

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- USG abdomen: Multiple calculi in gall bladder. Multiple collaterals replacing Portal vein. Multiple collaterals noted in and around Pancreas
 - OGD scopy –normal
 - MGE opinion: EHPVO/non bleeder

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- Day 14- Started on Plain Insulin. 0.3u/kg tid. Then changed to twice a day mixed regime on day 20
 - Shifted to ward on day 17
 - He was discharged in stable condition with good control of blood sugar

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- This case is mainly presented to highlight the multiple complications and deviation in the management from routine DKA protocol

INSULIN



- Dose & time of starting-started 0.05u/kg/hr only after shock had resolved(after 5 hrs)
- Continued IV Insulin even after correction of acidosis
- Need for rapid acting Insulin to help titrate sugar in the presence of renal failure.

FLUIDS. . .




- In DKA fluids not more than 50 ml/kg- in 4 hours, but our patient had hypotensive shock with coexisting sepsis- given bolus upto 120 ml/kg
- Despite fluids his cerebral edema did not worsen as expected.

TAKE HOME MESSAGE



- DKA presenting as hypotensive shock and renal failure is rare.
- Fluids may have to be titrated based on the individual patient's presentation and response to treatment.
- Suspect renal failure if there is no improvement of blood sugar

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- Renal failure can be secondary to rhabdomyolysis or shock
 - TEAM EFFORT helps !

Acknowledgements



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