



## A CASE OF INCOMPLETE DISTAL RENAL TUBULAR ACIDOSIS WITH HYPOKALEMIC PERIODIC PARALYSIS

### Endocrinology

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### KEYWORDS

#### BACKGROUND

Renal tubular acidosis (RTA) represents a group of disease occurs when kidneys are unable to maintain normal acid base homeostasis because of tubular defects in acid excretion or bicarbonate ion reabsorption. There are four types of renal tubular acidosis (RTA)-type 1 RTA (distal), type 2 RTA (proximal), type 3 (mixture of type RTA 1 or 2), type 4 RTA (hyperkalemic). In all the types of RTA, whether proximal or distal there are some extra-renal manifestations which provide important diagnostic clues as to the underlying etiology.

#### Case Report

37 years female, presented with complaints of recurrent episodes of hypokalemic periodic paralysis. There was no history of hypertension, cushingoid features or history of thyroid disorder. There was history of polyuria without any bony pain, fractures or tenderness. Her menstrual cycles were regular. Patient did not give history of any recent medications, diarrhoea or vomiting. On examination, patient had few ectopic beats with normal blood pressure, without any hyperthyroid signs or cushingoid signs. There was no evidence of limb weakness, bony deformity or fracture.

#### Examination:

##### General Examination-

Height – 151cm Weight – 47kg BMI- 20.3kg/m<sup>2</sup>

**Pulse:** 76/min, irregular, few ectopics present,

**BP:** 100/70mmHg in all 4 limbs P/L/Cy/C/E – absent, face-normal

##### Teeth- Normal

- Skin- acanthosis nigricans-, cushingoid features-, eyes- no cataract
- Thyroid normally palpable,
- SMR- B5 P5
- MSK- Chvostek's sign-, trousseau's –, no bony tenderness

##### Systemic Examination-

- CNS- no proximal limb weakness
- Abdomen- no abdominal mass palpable
- CVS- no murmur, few ectopics present.

##### Lab Findings:

- TLC- 14080(N68.6L27.8), Hb- 10.6gm/dl, platelet- 2.53lacs
- AST – 31U/L, ALT- 27U/L, ALKP- 94U/L, Albumin- 4g/dl blood urea- 27mg/dl, s. creatinine- 1.4mg/dl (eGFR- 50ml/min/m<sup>2</sup>)
- TSH- 2.27mIU/L, PTH- 3pmol/L (normal)
- ABG- pH- 7.21, HCO<sub>3</sub>- 18mmol/L

Date	s. Ca <sup>+</sup>	s. PO <sub>4</sub> <sup>-</sup>	s. Na <sup>+</sup>	s. K <sup>+</sup>
28/07/2022	9.4		146	1.89
29/07/2022			143	2.2
30/07/2022	8.1	2.4	141	3.1
23/08/2022	8.4	3.4	140	2.7
24/08/2022	8.6	4.2	137	3.4
02/09/2022				

##### Urine analysis-

urine- sugar-, protein-, pus cells- 2-3/hpf

**K- 43mmol/L/day(>15- renal loss)**, urine phosphate- 0.26g/24 hour, Urine Ph- 7

##### 24hour urine calcium-

18.2mg/24hour Urine osmolality- 300mosm/ kg, serum osmolality- 286.86mosm/kg

**TTKG- 4(≥4increased distal renal potassium excretion)** ECG- U wave+, VPC+, 2DECHO- EF- 60%

##### USG abdomen-

right sided mild hydroureteronephrosis, cystitis, debris in Urinary bladder Post treatment ABG- pH- 7.368, HCO<sub>3</sub>- 22.8mmol/L.

In view of above findings, patient w FLUDROCORTISONE FRUSEMIDE TEST-

Time	Urine ph
9am	6.5
10am	6
11am	6
12MD	6
1pm	6

as subjected to frusemide fludrocortisone test which failed to acidify urine pH. Patient was diagnosed with incomplete distal renal acidosis and started on bicarbonate and potassium replacement after which metabolic parameters improved. Cardiology opinion was taken and opined in view of ectopic beats. Urology opinion was taken in view of mild hydroureteronephrosis. Patient is being discharged with stable vitals.

#### DISCUSSION

1. A myriad of acquired causes are known to cause type I dRTA, the most classical one being Sjögren's syndrome with autoantibodies directed at  $\alpha$ -intercalated cells. For familial cases, autosomal-recessive and autosomal-dominant mutations in the anion exchanger. (1)
2. Gill et al first described patients with hypokalemic distal RTA which was due to ameliorated with NaHCO<sub>3</sub> or phosphate but not NaCl. Dafin et al in their study found that non specific H<sup>+</sup>-K<sup>+</sup> ATPase inhibitor could induce hypokalemia and metabolic acidosis in type I dRTA.

#### CONCLUSION

In clinical practice patients with RTA can present with a wide range of symptoms. Accurate diagnosis of RTA is very important in selecting appropriate treatment strategy.

#### REFERENCES

1. Fuster DG, Moe OW. Incomplete Distal Renal Tubular Acidosis and Kidney Stones. *Adv Chronic Kidney Dis.* 2018 Jul;25(4):366-374. doi: 10.1053/j.ackd.2018.05.007. PMID: 30139463; PMCID: PMC7932558.
2. Dafnis E, Spohn M, Lonis B, Sabatini S. causes hypokalemic distal renal tubular acidosis. *Amer J Med.* 1992;262:F449-453.