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# Challenging case of Gitelman Syndrome in Pregnancy, with a prior history of multiple miscarriages

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MudassirAli[1], Muhammed Pervez[1], JamsheedMuhammed[1], Tom Gziut[1], ShafieKamaruddin[1], Praveen Partha[1], GirdharTarigopula[1], John A. Sayer[2], Paul Peter[1]

[1]Department of Diabetes and Endocrinology, Darlington Memorial Hospital, DL3 6HX, UK

[2]Translational and Clinical Research Institute, Faculty of Medical Sciences, Newcastle University, NE1 3BZ, UK

Contact Information Email: paulpeter@nhs.net

## INTRODUCTION

Gitelman syndrome (GS) is an inherited cause of metabolic alkalosis due to salt losing tubulopathy. It is a rare autosomal recessive renal disorder resulting from mutations in ***SLC12A3***, which encodes for the thiazide-sensitive sodium chloride co-transporter in the distal convoluted tubule. It is classically associated with **hypokalaemia, hypomagnesaemia, hypocalciuria, metabolic alkalosis**, and normal or low blood pressure. ***We report a challenging case of GS presenting in pregnancy with prior history of multiple miscarriages. The patient had various episodes of symptomatic hypokalaemia requiring multiple hospital admissions for electrolyte replacement.***

## Common symptoms of GS

- Majority of cases are asymptomatic
- Weakness and fatigue
- Tingling and numbness, particularly face and hands
- Muscle cramps
- Feeling more thirsty
- Muscle twitching
- Palpitations

## Case report:

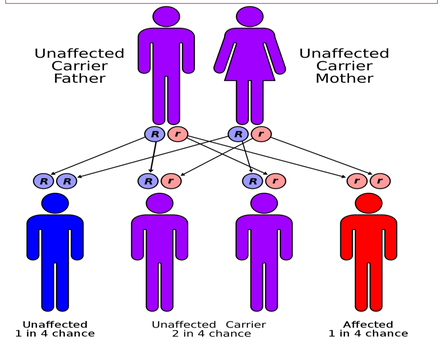
- 27 year old lady who was known to have hypokalaemia since 17 years of age, presented to hospital in December, 2017 with symptomatic hypokalaemia complaining of tingling and numbness around her mouth and weakness of both lower limbs. This was her first admission in hospital related to hypokalaemia and the potassium was 2.2 mmol/L and magnesium was 0.6 mmol/L, she was found to be pregnant at this admission. **Prior to this admission she was just on oral potassium citrate syrup 5 ml BD.**
- She received intravenous potassium and magnesium infusion and was discharged on oral supplements. Later in January 2018 she had a miscarriage at 15 weeks. In December, 2018 she had another miscarriage at 11 weeks.
- Between February to July 2018 she had at-least once hospital admission per month for iv potassium and magnesium infusion. After July 2018 she required weekly intravenous potassium infusion about 80-160 mmol of KCL per admission and continued to have hospital admissions once or twice a week for electrolyte replacement.
- Following informed consent, **DNA analysis revealed two heterozygous pathogenic *SLC12A3* variants**, confirming a molecular genetic diagnosis of GS.
- ***She became pregnant again, making the management more challenging***. Her medications during pregnancy included oral amiloride 5 mg BD, potassium chloride 600 mg MR 5 tablets QDS, magnesium glycerophosphate 4 mmol BD and sodium tablets slow release 1200 mg TDS. She was under regular care of both an endocrinologist and a nephrologist with special interest in renal genetics.
- This pregnancy was successful and healthy baby was delivered.

## INVESTIGATIONS

| Potassium (3.5-5.3 mmol/l ) | 2.8-3.0 mmol/l average ↓ |
|---|---|
| Magnesium (0.7-1.0 mmol/l) | 0.8 mmol/l average |
| Sodium (133-146) | 136-144 mmol/l average |
| Bicarbonate (19-38) | 23-34 mmol/l |
| Chloride (95-108) | 94-106 mmol/l average |
| Urine Sodium (24 hrs) | 171 ↑ |
| Urine Potassium(24 hrs) | 50 ↑ |
| Urine Calcium(24 hrs) | 0.71 ↓ |
| Aldosterone | 220 pmol/l(normal) |
| Aldosterone Renin Ratio | 20 |
| Pituitary profile | Normal |

**ECG: ST depression & U wave present**

**AUTOSOMAL RECESSIVE INHERITANCE**




## Discussion:

- After miscarriage, the symptoms of GS often improve and patients have stable levels of potassium. Our case presents an unusual example where patient had resistant severe symptomatic hypokalaemia which persisted beyond her miscarriage, even on maximum tolerated therapy.
- This case highlights with multidisciplinary approach and close monitoring of potassium and magnesium needed. With adjustment of electrolyte replacement therapy patients can have successful pregnancy outcomes.
- GS is a chronic condition that is usually manageable as an outpatient. However, as in our case, the severity of GS may seriously hamper daily activities and effect quality of life. ***The main aim is to improve electrolyte abnormalities (complete correction may not be possible), improve quality of life and prevent life threatening complications like ventricular arrhythmias and cardiac arrest.***

## CONCLUSIONS

- Physicians need to be aware of challenging cases of GS.
- Patients with GS during pregnancy may be very challenging to manage.
- ***The priority should be to keep the patient safe, improve quality of life and prevent complications in general.***

## REFERENCES

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