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Difficulties in the management of hypokalemia in a pregnant patient with Gitelman syndrome

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ABSTRACT

Gitelman syndrome (GS) is a rare renal disorder, and little is known about its impact on pregnancy. We report the successful outcome of pregnancy in a patient with GS that was managed with aggressive oral and intravenous potassium supplementation.

Key words: Gitelman syndrome; hypokalemia; pregnancy

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CASE REPORT

Gitelman syndrome (GS) is a rare renal inherited disorder that causes a defect in the Na-Cl co-transporter in the distal tubule. GS is characterized by hypokalemia, hypomagnesemia, hypocalciuria and metabolic alkalosis. Most patients are asymptomatic, some may experience clinical manifestations of the disease like fatigue, thirst, polyuria and other nonspecific symptoms [1].

A 37-year-old woman with GS and class B Pregestational Diabetes Mellitus in the 38th week of second pregnancy was admitted to a tertiary referral obstetric centre for observation and elective caesarean section due to tokophobia. The patient had a history of one spontaneous abortion at 8th gestational week, ten years of infertility and in vitro fertilization treatment.

In the past, the GS manifestations were palpitations and numbness in the legs, during hospitalization she reported no such symptoms. The patient remained generally symptom-free with mostly normal serum magnesium level and serum chloride level in the 99–105 mmol/L range (normal range 101–109 mmol/L). Initial biochemistry revealed low serum levels of potassium (3.37 mmol/L: normal range 3.5–5.1 mmol/L) and phosphorus (1.31 mmol/L: normal range 1.5–2.2 mmol/L). Her potassium and phosphorus profile remained low during the whole hospitalisation. Despite the deviations of the electrolyte levels her blood pressure remained within normal limits.

Before the hospitalisation she was on oral supplementation of potassium 10.64 g/day, after the initial biochemistry results the dosage of potassium was changed to 12.516 g/day. Despite this treatment her serum potassium level remained low (3.23 mmol/L). The supplementation was increased and on the day of the C-section serum potassium level normalised (4.0 mmol/L).

There were no surgical complications and a female child weighing 3.49 kg was born. The child's electrolyte and glucose levels were within normal limits. Blood loss during the C-section was estimated at about 600 mL.

After the delivery, despite intravenous potassium and magnesium supplementation, the patient's serum of magnesium decreased (0.62 mmol/L: normal range 0.66–1.07 mmol/L) and serum of potassium decreased significantly (2.7 mmol/L). Within the next two days, despite intensive oral and intravenous supplementation, potassium levels remained low (2.84–2.98 mmol/L). On the following day an intravenous supplementation was increased, which supported to maintain the optimal potassium level (3.66 mmol/L). On the day of the discharge the potassium intravenous treatment was changed

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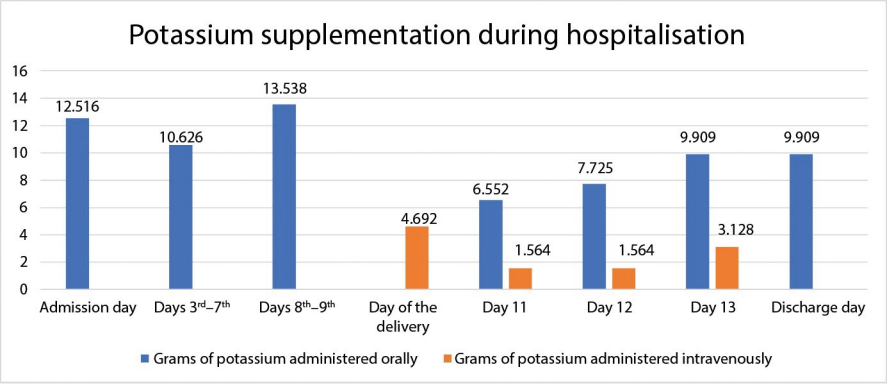

Figure 1. Potassium supplementation during hospitalisation

to oral supplementation, which caused decrease of the potassium level (3.2 mmol/L). The patient was discharged home four days after delivery on 9.384g/day oral potassium (Fig. 1).

Little is known about the impact of GS on pregnancy and the exact cause of the increased electrolyte supplementation need in pregnant patients with GS is not clear. Physiologic changes in renal hemodynamic during pregnancy might play a role. Pregnancy results in an increase in glomerular filtration rate and renal plasma flow which is associated with an upregulation of the renin-angiotensin-aldosterone system [2]. Once having healthy pregnancy women can tolerate this increased urinary loss, whereas in patients with GS it is leading to uncontrolled loss of electrolytes.

Route of electrolyte administration should be individualized depending on the patient's symptoms and electrolyte levels. Intravenous supplementation should be considered, even though some reports suggests that it may not be essential to achieve a successful fetal outcome [3, 4].

In conclusion, we feel that potassium supplementation is essential in pregnant patients with GS. The therapeutic objective is to ensure an uncomplicated pregnancy and successful fetal outcome. The patient should be well monitored not only during pregnancy and labour but also postpartum.

Conflict of interest

All authors declare no conflict of interest.

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